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A WEEKLY JOURNAL
OF PHARMACY
— AND —
THE DRUG - TRADE.



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THAT is one of the virtues of the C. & D. series of practical and useful money-making and money-saving books. The old editions are old friends; but the new editions bring new business, because they contain new ideas. They are:

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"PHARMACEUTICAL FORMULAS," of which a new edition has just been published (10s., office of THE CHEMIST AND DRUGGIST), contains, says the "Journal de Pharmacie et de Chimie," "useful and varied information. Unlike formularies published in France, this contains, in addition to formulas for galenical and chemical preparations, recipes for use in industry, perfumery, agriculture, and even cookery recipes." [For "cookery" read "culinary." The book is certainly comprehensive, but it does not tell how to scramble eggs.]

Summary.

The subjoined paragraphs give the gist of the more important matters in this issue, with the object of showing at a glance what has happened during the week. See also "Contents" in the first column.

THIS is the Annual Educational Number, in which is given a digest of the educational requirements of those entering pharmacy, medicine, dentistry, veterinary surgery, and professional chemistry.

Sections deal with the diplomas which can be taken by opticians, scholarships and prizes, appointments, and books useful to students.

We have also included notes on the various Universities, Colleges, and Schools where instruction can be obtained in the subjects dealt with in this number.

The information is given in a condensed form, but care has been taken to supply data from which more details can easily be deduced.

The information regarding Colonial qualifications in pharmacy is more extended than usual, in response to requests we have received from various correspondents.

THE French Codex will come into force on September 15 (p. 256).

MR. J. H. WILSON, Harrogate, died last week. We give a portrait and some biographical details on p. 260.

The old Bell and Dragon sign belonging to Messrs. Corbyn, Stacey & Co. has been deposited in the Guildhall Museum (p. 253).

DR. JULIUS TRAPP, who has been an honorary member of the Pharmaceutical Society of Great Britain since 1875, is dead (p. 260).

BRITISH exporters should keep an eye on the trade possibilities of Mexico. Some notes on the commercial activity of that country are given on p. 266.

SUGAR can now be imported without restriction from Russia, Denmark, Spain, and the Argentine Republic. An Order in Council to that effect has been gazetted (p. 266).

A SERIES of papers on pharmaceutical arithmetic is begun in the Corner for Students. It is proposed to award prizes for the best answers to the problems (p. 252).

CHEMISTS are particularly liable to liver disease, nervous diseases, and Bright's disease. That is the conclusion come to by the Registrar-General from a study of the mortality figures of the last three years (p. 266).

"XRAYSER" has some interesting information to give about shop-taxes which were formerly levied in this country. Similar contributions still exist in France. The subject is *a propos* of the licences which traders have to take out in Cape Colony (p. 263).

WE give some notes on the pharmaceutical career of Mr. Robert Wright, who is this year President of the British Pharmaceutical Conference. His persistence in carrying on patient researches is one of those examples which are appropriate to student-pharmacists (p. 268).

THERE is rather a better tone on the drug and chemical markets this week, but the bulk of the alterations in prices are of no great moment. Cocoa-butter, Japan vegetable wax, Mexican sarsaparilla, and Angostura tonka-beans are higher. Ammonia sulphate and menthol are firmer. New chamomiles, copaiba, shellac, and some of the citrates are lower (p. 299).

Corner for Students.

Conducted by Leonard Dobbin, Ph.D.

SUMMER STUDIES.

Pharmaceutical Arithmetic.

By Walter S. Clark, Ph.C.

IN this article a few of the principles underlying the calculations likely to be met with by the pharmacy student are explained. The exercises which will follow are based chiefly on the Pharmacopœia, and serve a double purpose in that they compel study of that work and also present types of calculations likely to be met with at the dispensing-counter and at the Minor examination.

In the first place it is necessary to impress the student with the fact that cleanliness and neatness are just as essential in making a calculation as in performing a chemical analysis. A page full of figures without a word of explanation as to what they represent is quite useless from an educational point of view, and usually results in errors. To give an example:

Example 1.—Find the specific gravity of a mixture of 1 fluid ounce of olive oil and 4 fluid ounces of castor oil.

Do not irritate an examiner and lose half your marks by handing in a solution like this:

$$\begin{array}{r} 0.915 \\ 3.880 \\ \hline 4.795 \\ 5 \end{array} = 0.959 \text{ s.g.}$$

but work somewhat like this:

Weight of 1 fl. oz. of olive oil (s.g. 0.915) = $1 \times 0.915 = 0.915$
Weight of 4 fl. oz. of castor oil (s.g. 0.970) = $4 \times 0.970 = 3.880$

Weight of 5 fl. oz. of mixture = 4.795
And weight of 5 fl. oz. of water = 5 oz.

$$\therefore \text{S.g.} = \frac{\text{weight of mixture}}{\text{weight of equal volume of water}} = \frac{4.795}{5} = 0.959$$

Always look at your answer carefully and see whether it is possible for it to be correct. Mistakes in placing decimal points are easily made, and just as easily detected by examination. Never simplify a complex fraction until absolutely forced (see Example 2 below). Reason from first principles, and do not use formulæ given in text-books, as you learn nothing by using them and you cannot expect to remember them. Carefully study the imperial, apothecaries', and metric systems of weights and measures from any good text-book. It will be sufficient here to draw attention to the following facts:

One pound avoirdupois contains 7,000 grains, and an ounce avoirdupois therefore contains $\frac{7000}{16} = 437.5$ grains, while an apothecaries' ounce contains 480 such grains. Where an ounce is ordered in the Pharmacopœia the avoirdupois ounce (437.5 grains) is intended, but where $\mathfrak{z}$ is asked for—as, for example, in a physician's prescription—the apothecaries' ounce (480 grains) must be used.

The volume occupied by 10 lb. of water at 62° F. is called a gallon, which therefore contains 70,000 grains. A fluid ounce, being the $\frac{1}{160}$ part of a gallon, is the volume of $\frac{70000}{160} = 437.5$ grains of water. Hence a fluid ounce of water weighs an avoirdupois ounce; and since it contains 480 minims, it follows that 100 grains of water measure $\frac{480 \times 100}{437.5} = 110$ minims (approximately).

One cubic foot of water (=1,728 cubic inches) weighs 1,000 oz., and therefore contains $\frac{1000}{16} = 62.5$ gals.

In the metric system, notice that the gram was originally, and still is approximately, the weight of a cubic centimetre of distilled water at its maximum density (4° C.). A litre is the volume of a kilogram of distilled water at 4° C., and contains 1,000 millilitres. For all practical purposes a millilitre may be taken as being equivalent to a cubic centimetre.

Commit to memory the following equivalents:

1 gram	15.432 grains
1 metre	39.37 inches
1 litre	1.76 pint

By the aid of these it is possible to convert any metric quantity into its imperial equivalent and *vice versa*.

EXERCISES.

Students are invited to send in week by week to the Editor, *C. & D.*, 42 Cannon Street, London, E.C., answers to the questions which will be given while this series of articles continues. Prizes will be awarded to all students who answer 50 per cent. of the questions correctly. Answers to the following ten questions will be published in the next issue of the *C. & D.* Students' answers to them must be received by the Editor not later than Thursday, August 20.

Exercises A.

In working these exercises—

1. Take atomic weights as given in the Pharmacopœia.
2. Enter your solutions in a small exercise-book, and do not use one page for more than one question.
3. Calculate the percentage composition by weight of linimentum camphoræ B.P.
4. Show that syrupus ferri phosphatis B.P. contains 1 grain of anhydrous ferrous phosphate in 1 fluid drachm.
5. Find the weight of a cubic inch of paraffin wax (s.g. 0.85) in grains and the volume of a kilogram of the same in cubic centimetres.
6. In preparing extractum nucis vomicæ I took $1\frac{1}{2}$ fl. oz. of the liquid extract and evaporated it until it weighed 150 grains. What weight of sugar of milk must be added to make the solid extract of B.P. strength?
7. Find the specific gravity of linimentum chloroformi B.P., assuming that no contraction or expansion takes place on mixing the ingredients and that the specific gravity of the linimentum camphoræ is 0.915 and of the chloroform 1.492.
8. What weight of concentrated phosphoric acid must be used to make 4 fl. oz. of a dilute acid containing 10 grams of H_3PO_4 per 100 cubic centimetres?
9. Calculate the weight of silver nitrate required to make 4 fl. oz. of a solution which, when diluted 1 in 5, yields a 1-in-1,000 solution.
10. What volume of B.P. nitric acid will neutralise 1 gal. of liquor potassæ B.P.?
11. Find the number of grains of phosphorus in a fluid ounce of oleum phosphoratum (s.g. 0.920).
12. Calculate the percentage by weight of zinc chloride in liquor zinci chloridi B.P.

Business Changes.

Properly authenticated business notices (not being advertisements) are inserted in this section free of charge if promptly communicated to the Editor.

GRAY'S HERBAL AND DRUG STORES has removed from 358 to 361 High Street, Rochester.

MR. W. R. WILLIAMS, chemist and druggist, has purchased the business of Messrs. Squire & Co., 189 High Street, Deptford, London, S.E.

MR. J. PEACE JONES, chemist and druggist, High Street, Builth, has disposed of his business to Mr. Templar E. Malins, chemist and druggist, of Cardiff.

MESSRS. C. F. BOEHRINGER & SOEHNE, Mannheim-Waldhof, have authorised Mr. Max Cron and Mr. A. Reimann, who have been in their employ for many years, to sign for the firm jointly *per procuracy*.

MR. ARTHUR PATRICK WALLACE, pharmaceutical chemist, Ennis, Co. Clare, late manager of Messrs. Hamilton, Long & Co.'s State Pharmacy, Dublin, has opened a medical hall at 28 William Street, Galway. (Corrected notice.)

MR. MATTHEW W. TWEDDELL has purchased the business carried on by Mr. R. Madgshon, chemist and druggist, for over forty years at 55 Ellison Street, Jarrow. Mr. Tweddell has been manager for Mason & Co., Ltd., chemists, 23 Ormonde Street, Jarrow, for twenty years.

MESSRS. DUNCAN & CRAKE, 148 Heaton Park Road, Newcastle-on-Tyne, have purchased the business, together with the prescription-books, of Mr. Millar Davison, 31 Heaton Hall Road, and have transferred the business to their establishment at Victoria Buildings, Heaton Road. Mr. Millar Davison is leaving the neighbourhood.

AN ordinance directing the pasteurising of all milk from cattle not proved free from tuberculosis has been adopted by the Chicago city government.

English News.

Local Newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Brevities.

At Middlesbrough on August 6 the medicated wine licence attached to the business carried on in Parliament Road by Mr. Jubb was transferred to Mr. W. C. Stubbs.

The quarterly meeting of the Three Towns Chemists' Association will be held on August 20 at 7 Whimble Street, Plymouth. The proposed constitution of the Federation will be discussed.

The second ramble of the West Ham Chemists' Association, under the guidance of Mr. H. Soper, has been postponed to August 20, when members and friends will go by train to Grange Hill.

The premises of Mr. J. Rayner, chemist and druggist, 32 High Street, Uxbridge, were sold by auction on August 6, being purchased for 1,550*l.* by Mr. George Hawkins, of Goldhawk Road, London.

The Rollesby Board of Guardians have appointed a committee to consider the advisability of the Board obtaining by contract the drugs for the medical officers, instead of the latter supplying them out of their salaries.

An International Congress on Electrical Units and Standards is to meet at Burlington House, Piccadilly, London, W., on October 12. The British delegates are Lord Rayleigh, Professor J. J. Thompson, Dr. R. T. Glazebrook, Sir John Gavey, and Mr. F. P. Trotter.

A man and woman named Solomons were at Marlborough Street this week fined 5*l.* and 1*l.* respectively for harbouring saccharin. There were some allegations that the woman was employed by a man named Stern to go to Rotterdam to fetch the saccharin, but the Magistrate said this was not proved.

The Leicestershire county authorities are investigating the poisoning of sixty sheep on a farm at Barwell, near Hinckley. The sheep became ill after being dipped in a dip made up from a formula of the Board of Agriculture. Eighteen of the animals died within forty-eight hours of being dipped.

John Simpson (40), surgical-instrument maker, Walthamstow, was committed for trial to the Central Criminal Court at the Stratford Police Court on August 8, on a charge of stealing and receiving goods belonging to Messrs. W. H. Bailey & Son, Ltd., of Oxford Street, London, W. (*C. & D.*, August 8, p. 218). Bail was allowed.

American gooseberry mildew has now made its appearance in at least seven parishes in Kent, and the County Council is issuing notices advising owners of diseased bushes to notify the fact to the county authorities, who have appointed inspectors to visit the affected areas. Information as to the preventives and remedies was given in the last volume of the *C. & D.*

Mrs. Thede, a young widow whose husband was killed while working for Messrs. Armour & Co., Ltd., Upper Thames Street, London, E.C., applied on August 10 to be allowed to draw out part of the money (207*l.*) paid into the City of London Court by the insurance company. She was allowed to receive 100*l.*, the rest of the money to be left with the Court for the present.

A special meeting of the Executive Committee of the International Congress against Alcoholism took place on August 4, when the draft programme will be submitted for approval. A Scientific Sub-Committee has been appointed, consisting of the following: Professor G. Sims Woodhead, M.D., F.R.S.E., Dr. J. J. Ridge, Dr. Theo. B. Hyslop, F.R.S.E., Dr. T. N. Kelynnack, F.R.C.P., Dr. E. Claude Taylor, Mr. W. McAdam Eccles, F.R.C.S., and Mr. Theodore Neild, M.A.

Optical Convention.

The permanent committee appointed by the First Optical Convention in 1905 is now making arrangements for holding the Second Optical Convention in London in May 1909. An executive committee has been appointed, and has already arranged an organisation of sub-committees on lines dictated by the experience gained at the first convention. The convention is intended to bring into close touch and to further the interests of those interested in optics from the various

points of view of manufacturer, retailer, designer, and user. In addition to the reading of papers an exhibition will be arranged, which will consist principally of instruments manufactured in this country, although it is proposed to invite from foreign firms special exhibits of instruments of scientific interest as distinct from commercial competitive products. A provincial sub-committee, and a colonial sub-committee are to be formed. The acting president of the convention is Dr. Glazebrook.

Poisons and Pharmacy Bill Amendment.

The following memorial, signed by Mr. John Jones, Bolton House Pharmacy; Mr. Henry Williams, the Medical Hall; and Mr. E. G. Thomas, The Pharmacy, Holyhead, has been forwarded to the Pharmaceutical Society. We are informed that the medical men and dentists of Holyhead concur in sentiments expressed in the memorial:

We, the undermentioned chemists and druggists of Holyhead, qualified and registered under the provisions of the Pharmacy Act, 1868, think it expedient that the Council of the Pharmaceutical Society should endeavour to have a clause inserted in the Poisons and Pharmacy Bill to make it penal for any qualified man to cover a company or an unregistered individual, and by so doing to have his name erased from the register.

There has been further correspondence with Mr. Bremridge in regard to this matter.

The Fred Reynolds Memorial.

On August 8, at the Leeds Poor Children's Holiday Camp Association's premises at Arnside, the dormitory extension which has been erected as a memorial to the late Mr. Fred Reynolds, of Leeds, and which is known as "The Fred Reynolds Memorial Wing," was formally opened by Mrs. Bagot, of Levens Hall, a Lady of Grace of the Order of St. John of Jerusalem. At the same time a portrait of the late Mr. Reynolds and a memorial tablet were unveiled. The memorial tablet bears the following inscription:

THE REYNOLDS MEMORIAL WING.

In affectionate remembrance of Fred Reynolds, of Leeds and Ilkley, whose gentleness, charity, sunny nature, and love of children were conspicuous elements in a noble character, this additional dormitory is erected with the aid of donations from over 150 of his many friends. July 1908.

He loved his fellow-men.

There was a very large attendance, and much interest was shown in the occasion, which is so fitting a memorial to a man whose personal character had so largely impressed itself on the life of his native city.

An Ancient Druggists' Sign.

An interesting relic of the days when nearly every trading house was known by its own particular sign—before the practice of street-numbering—has just been presented to the Guildhall Museum, which already contains a magnificent collection of relics of Old London. This is the actual stone sign—much worn by age—which was at one time a familiar feature over the shop of Messrs. Corbyn, Stacey & Co., in the Poultry, of the "Bell and Dragon." Above, carved in rude characters on wood, is the inscription: "Ye ancient druggist sign of this House. 1666." The history of this sign is somewhat curious. Messrs. Corbyn, Stacey & Co. many years ago purchased the business of Winstanley & Son in the Poultry. In 1866 it was decided to rebuild the premises, and in digging the foundations this old sign was brought to light. The action of fire on the stone was apparent, and it is supposed that the sign was in use at the time of the Great Fire of London in 1666. It is curious that before the discovery the firm had retained the Bell and Dragon as a trade-mark. Messrs. Corbyn, Stacey & Co. gave up their retail shops some years ago, and the recent transference of the wholesale business from High Holborn to a new factory in Commercial Road, E., has suggested that the historic sign would be better housed with other similar signs in the Guildhall. The sign was figured in the *C. & D.* some years ago.

Grimsby Chemists' and Druggists' Association.

A meeting of this Association was held on August 10. Those present included Messrs. C. H. Ashton, D. Brocklesby, H. W. Colley, C. Dewing, R. C. Johnson, W. G. Robinson, E. Sigley, T. D. Sneath, and F. W. Heely (Hon. Secretary). Mr. T. D. Sneath took the chair. It was decided that the Secretary should be left to make

arrangements for a visit of the Association to Lincoln. A communication from the secretary of the Federation of Local Pharmaceutical Associations was read, asking the Association to appoint delegates and to submit any matters for discussion at the forthcoming Aberdeen meeting. As no member present would be able to represent the Association, the matter was deferred. A letter was read from the President, Mr. Cor. Willson, resigning his position, but it was unanimously resolved to ask Mr. Willson to reconsider his decision and to hold office until the end of the financial year. A special meeting of the buying section is to be held on August 20.

Store-prices.

The following alterations and additions are included in the Army and Navy Stores price-list for August:

Reduced.—Jeyes' toilet-paper, packet 3½d., per dozen 3s. 3d.; senna-pods, lb. 1s. 4d.; spermaceti, lb. 1s. 8d.

Added.—Schenk's Anti-dandruff, tourist's bottle, 2s.; Pedesol, bottle 1s. 9d.; Eau de Luce, bottle 6d.; Roger & Gallet's Souvenir de la Cour perfume, bottle 14s. 9d.; Crown Perfumery Co.'s Coronita perfume, bottle 2s. 3d., 4s. 3d., 5s. 9d.; Coronita powder, box 1s. 10d.; Fougerson's Anti-diabetic biscuits, box 5s.; Beautymal, per jar 2s. 3d., 4s. 3d.; Bourjois & Co.'s perfumes La Dubarry (in fancy case) 13s. 6d., Manon Lescart 3s. 9d., ditto powder 1s. 10d., Violette Révée 2s. 10d., ditto powder 2s., Pomme D'Api 2s. 10d.; Coty's Le Vertige, bottle 11s. 6d., 24s. 6d.; Eillet France, bottle 16s., 28s. 6d.; "Antidotal" tooth-brush, each 7½d.

Embezzlement by an Assistant.

At Kidderminster on August 7, Wm. Hart Powell, an assistant employed by Mr. G. H. Taylor, chemist and druggist, Worcester Street, Kidderminster, was charged with embezzling 2s. 6d. Mr. Taylor stated that the accused had been in his employ since December 1905, and for the past twelve or eighteen months his salary had been 36s. per week living out. There was a cash-register till in the shop, and it was a strict rule that all cash must pass through it. For some time past the takings had been falling off, and it became plain to him that he (Mr. Taylor) was being robbed. One day the takings dropped so abnormally that he consulted the police. On July 29 a marked half-crown was paid to the accused for a bottle of Kutnow's powder, but the money could not be found on the till-register. The marked half-crown was subsequently found in prisoner's possession. Mr. Taylor added that he had heard that accused had promised to restore about 50l., but he had received no offer to that effect. Other evidence showed that since April 23, 1906, accused had deposited 40l. in the Post Office Savings Bank. Accused pleaded guilty, and was sentenced to three months' hard labour.

Contracts.

Newport (I. of W.) Town Council.—Mr. D. F. Ritchie, chemist and druggist, 68 High Street, Newport, proto-sulphate of iron, at 3l. 8s. per ton.

Salford Town Council.—Messrs. Thos. R. Jeans & Co., Salford, the supply of drugs and surgical appliances for the hospitals during the year, at 632l. 16s. 8d.

Islington Board of Guardians.—Messrs. S. S. Rothband & Co., Bent Street, Manchester (N.), waterproof sheeting to Highgate Hill Infirmary, at 3s. 10d. per yard.

Fires.

A fire occurred on August 6 in a store at the rear of the premises of Mr. E. Dobson, chemist and druggist, 4 Victoria Road, Deal. The damage done amounted to about 5l.

The members of the Padiham Liberal Club had occasion to investigate the cause of a peculiar odour on the evening of August 10, and the search resulted in the discovery of fire in the business premises of Mr. W. Taylor, chemist and druggist, 61 Burnley Road, which were immediately below the club. The flames were extinguished before any considerable damage was done.

The Brighton Case.

Napoleon Hirschfeld appeared again at Brighton Police Court on August 11 (*C. & D.*, August 8, p. 218). Mr. R. A. Cripps, F.I.C., gave details of his analyses of the defendant's remedies. He said a mixture proved to be solely lime-juice cordial, and that the cost of the tubes filled with

embrocation (turpentine) would be 5d. for forty-two. The tube of acid-expeller would cost about 8d. for the same number. It appears the accused had posed as a specialist at Buxton or Bournemouth, but police witnesses showed he had no establishment at either of those places. The manager of Messrs. Warwick Bros. produced specimens of orders sent by the prisoner for the magistrate's inspection. The case was adjourned.

Analysts' Reports.

The Lincoln city analyst states in his report that the samples of olive oil examined were genuine.

The East Suffolk public analyst reports that two samples of glycerin contained respectively $\frac{2}{100}$ and $\frac{1}{100}$ grain of arsenic per lb.

The quarterly reports of the food and drug inspectors for the East Riding of Yorkshire show that three samples of paregoric and six of milk of sulphur were taken, of which none were adulterated.

The Hampshire public analyst examined under the Sale of Food and Drugs Acts the following samples, which proved to be genuine: Ground ginger, 1; pepper, 3; arrowroot, 2; citric acid, 2; cream of tartar, 1.

The Salford public analyst (Mr. J. Carter Bell) in his report comments on the satisfactory milk-supply of the borough (six only of 106 samples being adulterated) and the pleasing feature of the absence of preservatives.

The Lancashire county analyst reports on the following samples during the quarter, which were accepted as genuine: Vinegar, 15; pepper, 39; ginger, 18; corn-flour, 1; compound liquorice-powder, 2; cream of tartar, 1.

The public analyst for Rochdale (Mr. T. Stenhouse) states in his quarterly report that of the nine samples of ordinary drugs examined one of liquorice-powder was of a poor and coarse nature, and a sample of sweet nitre contained only four-fifths of the minimum quantity of ethyl nitrite. The other samples accorded with the pharmacopœial standard.

The Kent county analyst examined during the past quarter twenty-nine samples of drugs, comprising olive oil, 2; cream of tartar, 4; crushed linseed, 6; spirit of nitrous ether, 2; glycerin, 1; beeswax, 1; seidlitz-powders, 8; liniment of camphor, 1; tincture of iodine, 1; tincture of rhubarb, 1; and spirit of camphor, 1. One sample of cream of tartar proved to contain 92 per cent. of potassium hydrogen tartrate, in the place of 97 per cent. The remainder of the samples were genuine.

The annual report of the medical officer of health for Westminster (Dr. F. J. Allan) shows that of the samples analysed during 1907 of thirty-one samples of milk of sulphur examined two were adulterated. One offender was fined 3l. and 12s. 6d. costs for selling a sample containing 47.9 per cent. of sulphate of lime, and the other was fined 1l. 10s. and 12s. 6d. costs for selling flowers of sulphur as milk of sulphur. Of thirty-four samples of cream of tartar twenty-six were genuine, six inferior, and two adulterated. The following samples were genuine: Mineral waters, 11; cod-liver oil, 18; flowers of sulphur, 1; oxide of zinc, 10; zinc ointment, 4; saffron, 1. The report also states that in six cream-of-tartar samples the amount of lead present did not exceed 0.0005 per cent.

The quarterly report of the public analyst for Bedfordshire shows that one sample of carbonate of soda contained 100 per cent. of cream of tartar, and another was a sample of bicarbonate of soda. The remaining samples were all genuine: Arrowroot, 1; carbonate of soda, 2; carbonate of magnesia, 1; cod-liver oil, 1; corn-flour, 1; cream of tartar, 1; flowers of sulphur, 4; ginger (ground), 2; ginger (whole), 1; lemonade-powder, 1; tartaric acid, 1.

The Leicestershire county analyst, Dr. Bernard Dyer, according to his quarterly report, had submitted to him for analysis thirty-four samples of medicines prepared from prescriptions. The report states that the medicines were made up from a variety of prescriptions, such as would be written in ordinary practice, and involved the use of a number of drugs so as to require careful dispensing. The result was that, although the prescriptions were made up

by the same number of dispensing chemists in various parts of the county, all were found to be accurately and satisfactorily dispensed.

Analysts' Appointments.

Mr. F. W. Stoddart, F.I.C., has been re-appointed public analyst for the City of Salisbury.

Mr. A. H. M. Muter, F.I.C. (of the South London Central Public Laboratory, 325 Kennington Road, S.E.), has been appointed by the Tunbridge Wells Town Council to succeed the late Sir Thomas Stevenson as public analyst to the borough.

Midland Notes.

Stoke Wakes synchronised with Bank Holiday. All work is at a standstill and pharmacy took its rest or pleasure during that week.

Mr. R. Ashmole Cooper, son of Sir R. Cooper, of sheep-dip fame, is the prospective Parliamentary candidate for the Bloxwich (Walsall) division.

A Birmingham proprietor of proprietary medicines has adopted the advertising method of scattering handbills on the floors of the electric tramcars.

A Bristol Flower-show.

Messrs. Ferris & Co.'s Horticultural Society—an organisation originated by the employés of the well-known Bristol house of chemists and druggists—held an exhibition of roses, sweet peas, and other flowers and fruit on August 6 at Union Street. The exhibition was a great success and indicated marked advance over previous shows. On August 8 about thirty members of the Society visited the gardens of the Right Hon. Lewis Fry at Goldney House, Clifton. Mr. G. Howe, the head gardener, piloted the visitors and proved an instructive guide.

Cricket.

Nottingham Chemists v. Lenton United.—The chemists suffered defeat on August 6 by 117 runs, the scores being: Chemists, 67; Lenton United, 184. For the losers the principal scorers were Goudie, 24; Gilborn, 16; and Adamson, 12.

Davy Hill's C.C. v. Potter & Clarke's C.C.—This match was played at Crofton Park on August 8, the result being a draw. Scores: Potter's (A. D. Denton 39, W. Hayden 17, and W. Desborough 11), 103 runs for nine wickets, declared; Davy Hill's (Parker 19, Clark 17, and Chown 14 not out), 71 for four.

The Leicester Chemists evidently meant putting a win to their credit on meeting the Leicester Postmen on August 6, but the victory was not secured by good batting, as they only amassed a total of 39 runs, Mr. H. W. Clear being the only one to get double figures with a score of 10 runs. Their opponents, however, were quite at sea against the bowling of Mr. T. C. Peberdy, who took nine wickets for 9 runs (including the hat trick), the Postmen being dismissed for 16 runs, the Chemists thus winning by 23 runs.

The Sheffield Pharmacy Athletic Club are completing their arrangements for welcoming the Notts chemists on their annual visit next Thursday, August 20. After cricket the teams are to have tea at Wright's Restaurant, Moorhead. The club have not had a very successful cricket season, having only won one match, but the football team is to be resuscitated during the coming winter, and better times are expected of that.

Irish News.

Local Newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Personal.

Mr. Thomas Hanna, registered druggist, Carrickmacross, has been appointed a magistrate for the County Monaghan. He has been a member of the Chemists' and Druggists' Society of Ireland for some years.

Among the examiners to the Apothecaries' Hall of Ireland who have been appointed for 1908-1909 occurs the name of Dr. J. C. McWalter, pharmaceutical chemist,

who is appointed to examine in medical jurisprudence and materia medica. Sir Charles Cameron is an examiner in hygiene.

Mr. Walter Joseph Healy, pharmaceutical chemist, the Dispensary, Grand Canal Street, Dublin, has passed the Final examination in medicine, surgery, midwifery, and pharmacy of the Apothecaries' Hall of Ireland. The Guardians of the South Dublin Union have passed a resolution congratulating Mr. Healy on having gained the licence of the Apothecaries' Hall.

Guardians and Drug-supply.

The Cork Chemical and Drug Co., Ltd., have been appointed contractors for the supply of drugs to the Cork Union, subject to the approval of the Local Government Board.

Messrs. Boileau & Boyd are pressing the Carrickmacross Guardians for empties which have not been returned. The Guardians were sued by a Belfast firm for the return of empties some time ago. The contractors are to be asked to supply particulars of the dispensaries that are in default.

Messrs. Boileau & Boyd have also addressed to the Guardians of the Navan Union a strong letter of complaint concerning the non-return of empties. The Clerk of the Union said that when the empties are packed and the contractors notified they say they are not worth taking away. Now they ask for payment. The matter was referred to the dispensary officer for report.

The Guardians of the Dromore West, Co. Sligo, are complaining that the drug contractors, Messrs. Boileau & Boyd, Dublin, have made no arrangements for delivering drugs from the railway station to the dispensary. The Guardians threaten to have a question put in the House of Commons if the Local Government Board do not cancel the contract in favour of a local man.

Scotch News.

Local Newspapers containing marked items of news interesting to the Trade are always welcomed by the Editor.

Glasgow and the West.

Mr. J. P. Gilmour has replied to the insinuations that chemists encourage methylated spirit drinking (see *C. & D.*, Aug. 8, p. 221). At the end of a long letter he writes:

I presume that Mr. Gordon's exquisitely chivalrous insinuation that chemists have a covert desire to acquire a reversionary interest in the drink trade monopoly is either an irresponsible irrelevancy or a primitive manifestation of the comic muse. It is more charitable to accept the latter alternative, in which event, although the pleasantry may not contribute prodigiously to the gaiety of nations, it should at least serve to "tickle the ears of the groundlings." Mr. Gordon has since replied, and is of the opinion that, if the licensed trade is exterminated, "Mr. Gilmour and his colleagues will get the business."

Aberdeen and the North.

Mr. Wm. Wallace, King Street, has been reappointed chemist to the Court Granite City Lodge, Ancient Order of Foresters.

Business in Aberdeen, which has been very quiet during July, "the holiday month," is now showing signs of improvement.

A movement is on foot at present towards a reduction of Sunday hours. It is to be hoped, for the benefit of all concerned, that the promoters will meet with some degree of success.

Mr. Robert Macdonald, chemist, Inverness, was cycling near Artafallie, North Kessock, when he found a little girl with her clothes on fire. He extinguished the flames, but the child was terribly burnt, and died in the Inverness Northern Infirmary the next day.

The sales of the Northern Co-operative Co., Ltd. (drug department), for the year ended June 30 amounted to 1,237*l.* Compared with the preceding year, when they were 1,402*l.*, this shows a reduction of 165*l.* The profit for the year is 322*l.*, as against 402*l.* for the previous year, showing a reduction of 80*l.*

Dundee and District.

Referring to the alligator which your Paris correspondent writes about, there has been delivered a fine specimen in Dundee this week. It came from Calcutta, and as the local chemists are presumably all supplied with fine specimens, this one was put on view at the Green Market.

Mr. W. J. M. Key, son and assistant to Mr. G. B. Key, chemist and druggist, Kirkcaldy, beat Mr. John Dunsire by one hole in the final of the Burgh cleek tournament of the Kinghorn Golf Club. This was after a tie in the semi-final. This, the principal prize in connection with the club, was won by Mr. G. B. Key three years running.

There are complaints that the heather honey harvest is again not satisfactory. For some years now the yield even in the best-managed apiaries has been under the average, the weather being blamed. With the early blooming of the heather and a spell of warmth and bright sunshine the yield this year may be better than last year.

French News.

(From the "C. & D." Paris Correspondent.)

CHEMISTRY PROFESSORSHIP.—Professor Job, of the Toulouse Faculty of Sciences, has been nominated Professor of General Industrial Chemistry at the Paris Conservatory of Arts and Trades, in succession to Professor Jungfleisch.

THE FRENCH ASSOCIATION.—The thirty-fourth Congress of the French Association for the Advancement of Science was brought to a close at Clermont-Ferrand on August 8, when there was a gathering of some 300 scientists. It was decided to hold the 1909 Congress at Lille, and that in 1910 at Toulouse. M. Appell, *doyen* of the Paris Faculty of Sciences, presided at the closing meeting of the Congress, and he made a short reference to the death of the eminent naturalist, Professor Giard.

THE NEW CODEx.—It is announced that the French Pharmacopœia (or Codex) will come into force as of September 15 next, and will be known as the "1908 edition." The last edition of the Codex Medicamentarius dates from 1884, though a supplement was issued eleven years later. This new Codex has been in preparation for several years, and has been in the charge of a special Commission appointed by the Minister of Public Instruction. Details of the progress of the Commission have been given from time to time in the *C. & D.*

OBITUARY.—The death occurred a few days ago at Orsay, at the age of sixty-two, of a well-known French naturalist and member of the Paris Academy of Sciences, Professor Alfred Giard. He was a former student of the Superior Normal College, and a few years after leaving there became Professor of Natural History at the Faculty of Sciences, and later at the Faculty of Medicine, of Lille. In 1887 he was nominated to Paris and became Professor of Zoology at the Sorbonne. His high standing as a botanist and zoologist was undoubted, but he wrote very little. From 1882 to 1886 he represented Valenciennes in the French Parliament as a Radical.

INSPECTION OF PHARMACIES.—The official regulations have just been published indicating the conditions under which the new law concerning the inspection of pharmacies and for the suppression of the adulteration of drugs and medicines will be put into force. The regulations are of a very complete and precise nature, and include the formation of a special pharmacy section to be attached to the Ministry of Agriculture and the Ministry of Commerce and Industry. The President of this section will be the Director of the Paris School of Pharmacy, and its opinion will be obligatory concerning all questions of a scientific nature as regards the application of the new law. Details of the law have already been given in the *C. & D.*

AN ODYSSEY.—When the war of 1870 broke out, Auguste Blin de Belin, son of an army surgeon, was employed in a Parisian pharmacy, where he had been working for seven years. He was an ex-sergeant of the 2nd Zouaves and had fought side by side with the English at Inkerman (where he received a bullet through the thigh), at Magenta (where he

saved his captain's life), in Mexico, Algeria, etc. He enlisted, and received the epaulettes of sub-lieutenant. At Le Bourget a shell carried away part of his jaw and he was officially inscribed as killed in the engagement, but survived to gain the rank of lieutenant and captain. When the army was reorganised after the war he was ranked as lieutenant only. Annoyed at this, he resigned. The old soldier, mentioned thrice in General Army Orders for acts of courage, now finds employment in checking tickets at the doors of Parisian theatres.

THE ENDOWMENT OF RESEARCH.—The Council of the Faculty of Sciences has just drawn up rules for the distribution of the 4,000,000*f.* (160,000*l.*) which represents the annual interest of the Commerce bequest for scientific research. The sum will be divided into four equal parts. Three will be allotted to (1) mathematical, (2) physical, and (3) natural sciences; the fourth will remain free for special awards. The Scholarship and Subvention Committee will be composed of professors, two of whom will represent chemistry, one botany, two physics, one geology, three mathematics, two zoology or physiology. The scholarships will be of two kinds: (1) study scholarships for laboratory workers, (2) travelling scholarships. The results of the students' work—laboratory products or documents and specimens collected while travelling—will become the property of the Faculty.

SALE OF MINERAL WATERS.—Although the Pharmaceutical "Syndicates" or local societies in the various French departments principally exist for the defence of trade interests, some few of them carry on, and others patronise and encourage, undertakings of a more purely commercial nature in the way of co-operative manufactures, etc. The "Pharmaceutical Society for the Sale of Medicinal Mineral Waters," for instance, advertises itself as founded "with the moral support and under the control of the Loire and Haute-Loire Pharmaceutical Societies." Some springs are simply regulated (*réglementées*) for price-protection purposes; others are "monopolised" and directly exploited. The general idea seems to be that each pharmacist being thus personally interested in the matter will both push sales and promptly denounce cutting. The springs in question are pharmaceutically baptised; thus at Vichy we have the "Pelletier-St.-Yorre" and "Caventou-St.-Yorre"; at Vals the "Pasteur" and the "Lemery" sources. M. Tardivi, of St. Etienne, is the director (*administrateur-délégué*) of the company.

SOME NEW BOOKS.—The second edition of Guirats and Grimbirt's "Chemical, Microscopical, and Parasitological Diagnosis" has just appeared. This work was awarded the "Barbier Prize," and one of its authors has since been nominated Professor of Biological Chemistry at the Paris Superior School of Pharmacy.—Dr. V. Gardetti, of Châtel-Guyon, has published a "Formulary of Proprietary Remedies for 1908."—Professor Klobb, of Nancy, has collected and summarised in a ninety-page pamphlet the work of the late Professor Schlagdenhaufen, Director of the Nancy Superior School of Pharmacy, on chemistry (organic, inorganic, vegetable, hydrological, and analytical), chemical and galenical pharmacy, toxicology, physics, and botany.—The second edition of the "French Wines and Brandies" of M. Carles, the well-known Bordeaux pharmacist, has been specially edited for the medical and pharmaceutical professions in France and abroad. It specially deals with (and defends) the products of the Gironde, the Charente, the Gers, and Champagne.—A cheap reprint of Auguste Comte's "Course of Positive Philosophy" is being issued by Schleicher, of Paris. The first volume deals with chemistry and biology.—Dr. Darenberg's posthumous volume on "The Great Doctors of the Nineteenth Century" contains sketches of the great men whom he knew personally and otherwise—Pasteur, Duclaux, Claude Bernard, Charcot, etc. The author had contemplated the publication of a "History of Medicine during the Nineteenth Century," of which this was to form the preface.—M. G. Delacroix's "Maladies of Cultivated Plants" is another posthumous work. The first volume deals with non-parasitical maladies; the second (not yet published) will treat of the parasitical and bacteriological side of the question.

Australasian News.

The fullest information regarding the Australasian drug-trade and pharmacy is given in "The Chemist and Druggist of Australasia," copies of which can be obtained at 6d. each, post free, from the office of "The Chemist and Druggist," 42 Cannon Street, London, E.C.

Note.—"The Chemist and Druggist" is regularly supplied by order to all the members of the following, among other societies:

Central Pharmaceutical Association, N.Z.
Otago Pharmaceutical Association, N.Z.
Pharmaceutical Society of N.w South Wales.
Pharmaceutical Society of Queensland.
Pharmaceutical Society of South Australia.
Pharmaceutical Society of Tasmania.
Pharmaceutical Society of Western Australia.

New South Wales.

POISONS ACT AMENDMENT BILL.—The Colonial Secretary on June 4 received a deputation from the Pharmacy Board of New South Wales, introduced by Mr. F. J. Thomas, M.L.A. The deputation impressed upon the Minister the necessity of passing a new Poisons Bill. The Colonial Secretary carefully listened to the argument, and said that such a Bill would be a good measure. He could not, however, make a definite promise that the Bill would be introduced during the next session of Parliament, but he would place the matter before the Cabinet, and use his endeavours to have the measure included in the Government programme. The deputation consisted of the President (Mr. W. Short), with Messrs. H. S. Brothwood, L. P. Williams, and the Registrar.

New Zealand.

PRESCRIPTION CODE MARK.—At the Pharmaceutical Conference at Wellington Mr. Alex. Williams introduced the questions of a code-word for dispensing purposes and a dispensing price-list for New Zealand. He explained that the proposals dealt solely with the professional side of the business, and as a profession chemists are entitled to proper remuneration. He was supported by country members present, but got little support from the cities of Dunedin and Christchurch. Mr. Williams then moved that it be a request "that the code-word 'Chambertops' be adopted by the Association." This was carried, but a proposal to adopt a dispensing price-list was lost.

CHEMIST-OPTICIANS.—Another matter dealt with at the Pharmaceutical Conference was that of regulating the practice of optics. Mr. Williams, Napier, introduced the subject of the advisability of approaching Parliament with regard to getting a legal status for the business of the optician. He instanced many grave errors that had been caused by uninstructed persons travelling around the country posing as experienced opticians. For years the selling of glasses had been left in the hands of jewellers, but lately chemists have gone extensively into the matter, and are fast mastering the demand. He said that chemists are the proper people to handle such lines, and that he was sure that the experience the chemist gained in his daily work taught him to work well with the doctors in cases that were at all suspicious. As the doctor and chemist are the only two legalised professions, it behoved them to work together, for neither body could do much without the aid of the other. He also pointed out the vast strides dentists have made lately, and the prominence the Government has given them so far as creating the profession was concerned. Yet people are known to get along without teeth, but not without eyes, and protection in this direction is very necessary so far as New Zealand was concerned. Mr. Williams moved:

That the executive of the New Zealand Chemists' Federation consider the advisability of approaching Parliament with a view to placing opticians on a legal footing for the protection of people in the Dominion in the future. This was carried.

MEXICAN VANILLA.—The exports from Vera Cruz during 1906-7 amounted to 158 tons, valued at 261,224/., against 206 tons, valued at 402,080/., during 1905-6 and 108 tons, valued at 217,411/., in 1904-5.

South African News.

(From the "C. & D." Correspondents.)

Cape Colony.

CHEMISTS AND THE "PATENTS" TAX.—The deputation to the Government organised by the Cape peninsula chemists concerning the taxation proposals, referred to in our last issue, had not taken place up to the time of departure of the mail. It is understood that the committee were waiting to know definitely what the Government intends doing, and the particulars promised were not ready.

ALCOHOLIC "PATENTS."—In the Cape Lower House on July 21, Mr. G. J. Krige asked the Attorney-General whether the sale of patent medicines in the George District had led to wholesale drunkenness; if so, what steps were being taken to protect the public and the honest dealer. The Attorney-General replied that the Government had received information that certain medicines, such as Hoffmann's Droppels, "Jamaica Ginger," and "Red Lavender," were being used for other than medicinal purposes. The matter was being looked into.—A storekeeper in the Cape Division, who has a "tap" attached to his business, has been notified by the police that certain Dutch medicines may not be sold under a general dealers' licence. The Act says they may be, but for the sake of peace the general dealer offered to transfer this branch of his trade to the "tap." Whether the Government will sanction this, or allow the storekeeper to trade as hitherto, remains to be seen.

PLATINUM IN BORAX.—A paper on the "Existence of Platinum Metals in Chemicals used for Assaying" was read by Mr. J. G. Rose before the Cape Chemical Society on July 17, in the course of which it was stated that when conducting assays of rocks from Stutterheim and Swellendam in the Government laboratory, Mr. Rose was surprised to find in both cases yields of platinum amounting to nearly 5 grains per ton of rock. Previous experience had led him to be dubious regarding such occurrences of platinum, and he therefore performed a series of assays of the chemicals used, as he felt bound to suppose that it was from these chemicals that the platinum had come. The result was that the fused borax employed was found to contain platinum to the amount of one part in a million—that is to say, 0.0001 per cent.; a quantity which, although apparently insignificant, is quite enough to account for the existence of the platinum that seemed to have been extracted from the rocks. Further investigation proved that the simple process of fusing the borax on a platinum dish causes the borax to take up some of the platinum.

THE PRESCRIBING OF OPIUM.—In the Cape House of Assembly on June 9, Mr. Upington (Member for Cape Town) moved that all reports and papers giving rise to or connected with the recent proceedings instituted before the Colonial Medical Council with reference to the prescribing of opium by certain medical practitioners be laid upon the table of the House. He hoped that the result of an examination of the papers would be to show that the information in his possession was erroneous, but, if it were not erroneous, the matter was one which called for very serious inquiry. He hoped his motion would be the means of calling attention to the very serious difficulties in the Medical Council at present.—Dr. Hewet, as a member of the Council, said that when a charge was made, the Council had no option but to investigate it. They could quite understand how this operated, and how it led to a practitioner being placed on his trial before the public eye. The charge might be just or malicious, but the fact was that if the Medical Council found the practitioner guilty, this would weigh very materially against him supposing a criminal trial were ordered. He thought that, under the circumstances, the Act should be amended in the interests of medical men in the Colony.—Mr. De Waal said the Government had not the slightest objection to laying the papers asked for on the table. It would not, however, at the present stage, be wise to make any statement or to criticise his predecessors.

THE AMERICAN IN SOUTH AFRICA.—Mr. Julius N. Lay, United States Consul-General at Cape Town, tells in the

"New York Journal of Commerce" how American exporters may do more South African trade. He says:

The way in which those American houses which have succeeded in South African trade have done so is by establishing agencies of their own and sending out their own travelling representatives. In most instances it would hardly pay a single American manufacturer to start an agency of his own in Cape Town; but what he could do, and what he would find profitable, would be to go in with a number of other firms in non-competing lines to establish a joint agency and put a good, live American in charge. There is no doubt about it, at home or abroad the American of the right kind is the best salesman in the world. In a country like South Africa, where he knows the language, he is infinitely to be preferred to the foreigner. If he does not know the country he will overcome that handicap by his superior keenness and energy, and he will learn more in five months than the foreigner in five years. Two of the most flourishing businesses in South Africa—the drug business and the meat business—have been built up by American managers and salesmen. The American drug-houses send their own travelling representatives out periodically to canvass the country for their agencies there. . . . As an example of what can be done with the right methods, the record of the drug-trade may be taken. In that, although the total imports in 1907 fell off \$200,000 in comparison with those of 1906, our share showed an advance of \$35,000.

Orange River Colony.

CHEMISTS AND NIGHT DUTY.—After thinking for ten days over his rebuff at the Chamber of Commerce, reported in the *C. & D.* of August 1 (p. 192), Mr. R. H. Cole wrote to the "Bloemfontein Post" complaining that the opposition had no truth in it and that "in the course of a day or two he would give full details of his complaint and correct the misstatements," but after the lapse of a week nothing has yet appeared, so Mr. Cole has probably discovered that the misstatements were his own. Mr. Cole's alleged complaint is that chemists have not an attendant on duty at night, which statement is denied.

INFAMOUS CONDUCT.—The topic of the day is the case of Dr. Bateman, who was found guilty of infamous conduct by the Medical and Pharmacy Council. Three times the accused was called to appear before the Council for the purpose of the inquiry, but each time he stayed away, and the case was finally decided in his absence. At the urgent request of the Government, however, he was allowed to appear (assisted by counsel, Mr. Advocate Botha, M.L.A.) at the July meeting of the Council and offer his defence. The offence alleged to have been committed by Dr. Bateman was the giving to natives of orders to obtain brandy for medicinal use without just cause. The supplying of liquor to natives, it may be explained, is one of the most serious crimes a white man can be charged with in the Orange River Colony, and the average penalty is a fine of 50*l.* or six months' imprisonment. In a leading article on the Council the "Bloemfontein Post" comments on some of the anomalies existing in its constitution and powers, but any value one might attach to the writer's opinion is discounted by the glaring errors he perpetrates—as, for instance, stating that "in the hands of five medical men and four gentlemen representing the chemist (*sic*) of the town, is placed the honour, etc., of every doctor in the Colony." The correct figures are seven doctors, one dentist, and three chemists, and all but the doctors are expressly prohibited from voting or discussing medical matters except by special resolution of the Council. [P.S.—At the instigation of the Pharmaceutical Society the editor of the "Bloemfontein Post" has published a leaderette retracting the remarks he made with reference to the chemists on the Medical and Pharmacy Council.]

Transvaal.

FROM CHEMIST TO ACTOR.—Mr. W. H. Pearson, chemist and druggist, manager of Messrs. Turner & Co.'s Commissioner Street branch, Johannesburg, has joined the London Comedy Company recently formed in Johannesburg and now touring South Africa. Mr. Pearson has always contributed to the smoking-concerts and other social gatherings held by the Pharmaceutical Society, and his brethren of the craft wish him every success in his new venture.

SHOP-HOURS REGULATIONS.—On invitation from the Select Committee on Shop-hours, a deputation, consisting

of the President (Mr. Austin Purnell) and the Vice-President (Mr. Jas. Johnston), representing the Pharmaceutical Society of the Transvaal, gave evidence on July 16 in support of the following resolution, passed at a general meeting of chemists held in Johannesburg last year:

That chemists' shops be closed on Mondays, Tuesdays, Thursdays, and Fridays not later than 8 P.M.; on Wednesdays 1 P.M., re-opening from 6 P.M. to 8 P.M.; and on Saturdays be closed not later than 9 P.M.

The deputation met with a favourable reception, and it is hoped that shortly chemists will be working under more favourable conditions as regards hours. Prescriptions may be dispensed and medical requirements supplied at any hour during closed shop on special call.

TRANSVAAL PHARMACY BOARD.—The monthly meeting of the Transvaal Pharmacy Board was held at Johannesburg on July 17, under the presidency of Mr. B. Owen Jones, M.L.A., the others present being Messrs. J. H. Dinwoodie, R. Butters, J. R. Jones, Charles Keir, and the Secretary. A further communication was received from the Natal Pharmacy Board with regard to the reciprocal recognition of the certificates of qualification granted by the Natal and Transvaal Boards. In this letter it was stated that the Natal Board is satisfied that the value of the Transvaal examination is equal to that held in Natal. It was decided to ask the Natal Board for such information as would enable the Board to judge as to the relative value of the standards set by the respective Boards. It was reported that a complaint had been received with regard to the sale of medicines by coolie storekeepers and others at Standerton, and that the matter had been handed over to the Law Department for action. A list of permits to import opium recommended during the preceding month was confirmed. The Transvaal Medical Council referred to the Board for consideration a letter received from the General Medical Council of Great Britain, inviting suggestions or recommendations with regard to the preparation of the next issue of the British Pharmacopœia. A sub-committee was appointed to consider the matter and report. A petition forwarded to the Colonial Secretary by an unregistered person, who had carried on business as a chemist for some years prior to the passing of the Medical and Pharmacy Ordinance, and who wished to have his name placed on the Register of Chemists and Druggists, was transmitted to the Board with a query as to whether the Board would admit the petitioner to the Qualifying examination. It was agreed to reply in the affirmative. Applications for admission to practise as chemists and druggists were received and approved from Mrs. Minnie Alice MacKenzie, chemist and druggist, Transvaal, and Edward O'Brien and Alexander Anderson, chemists and druggists, Great Britain.

CHEMISTS AND S.V.R.—The Wholesale Liquor Merchants' Association of the Transvaal having written to the Pharmaceutical Society of the Transvaal that the sale of rectified spirit of wine by chemists in Johannesburg is a direct violation of the Liquor Law, rendering the seller liable to six months' imprisonment, the Hon. Secretary of the Pharmaceutical Society (Mr. S. M. Hendry) promptly asked for a ruling from the Attorney-General, pointing out that chemists are frequently called upon to supply doctors, hospitals, and laboratories with rectified spirit to be used for pathological and scientific work, and for the manufacture of medicinal tinctures, etc. In reply the Attorney-General stated "that the exemption contained in Section 2 (a) 1 of Ordinance No. 32 of 1902 would cover the sale of even rectified spirit by chemists in the circumstances stated by you, and such sales would not be in conflict with the Liquor Law."

Recent Wills.

MR. JAMES PATERSON, chemist and druggist, Helmsdale, Sutherland, who died on April 13, left personal estate valued at 3,233*l.* 8*s.* 2*d.*

MR. ALBERT EDWARD ROWCROFT, chemist and druggist, 66 Week Street, Maidstone, Kent, who died on July 6 last, left estate valued at 567*l.* gross, and at 442*l.* 17*s.* 5*d.* net.

MR. JOE TODD, chemist and druggist, 13 Main Street, Keswick, Cumberland, formerly in business at Botchergate, afterwards in English Street, Carlisle, and who died on April 4, left estate valued at 251*l.* 11*s.* 1*d.* gross.

Pharmaceutical Society of Ireland.

COUNCIL-MEETING.

THE monthly meeting of the Council was held on August 5 in the Society's House, 67 Lower Mount Street, Dublin.

The President (Mr. John Smith) occupied the chair, and the other members of the Council present were Messrs. W. F. Wells, J. E. Connor (Newry), T. N. Moffitt (Belfast), Thomas Batt, George D. Beggs, Joseph H. Bowden, and James Michie.

PRELIMINARY EXAMINATION CERTIFICATES.

A letter was received from the Irish Privy Council approving of the new regulation passed by the Council with respect to the acceptance of the Preliminary examinations of other bodies (see p. 277).

The PRESIDENT: It is very satisfactory to have got this regulation approved of at last. It will work to the advantage of our young men.

Mr. MICHIE: Is it in force now?

The PRESIDENT: Yes.

DISPENSERS' HOLIDAYS.

A letter was received from Mr. Edward Whelan, a member of the Society, requesting the Council to ask the Local Government Board to make an order allowing Poor-law dispensers to get an annual holiday without having to pay substitutes to act in their absence.

The PRESIDENT said there is no doubt that the Poor-law dispensers have a grievance in being obliged to pay their substitutes. They ought to be treated in the same way as the dispensary doctors and have their substitutes paid, and they ought to get a month's or a two-months' holiday. He certainly thought the Council ought to take some step in the matter; but this was the letter of only one man, and it would be well to collect the opinions of other dispensers as to the length of the holiday and as to whether full or half pay should be allowed.

Mr. MICHIE said he was not sure that the Council had anything to do with the matter. The dispensers themselves should take the initiative.

Mr. CONNOR: I think we should assist them.

The PRESIDENT: We ought to back them up.

Mr. BEGGS: Let the Registrar write to Mr. Whelan, asking him to get up a memorial to the Local Government Board expressing the opinions of the dispensers on the subject, and we could send a covering letter with it. I move that that be done.

This was agreed to.

OTHER MATTERS.

A donation was received from the Editor of THE CHEMIST AND DRUGGIST of copies of "Pharmaceutical Formulas" (new edition) and "The Chemist-Optician."

On the motion of Mr. CONNOR, seconded by Mr. BOWDEN, thanks were voted to the donor.

Reports were read from the Law and House Committees.

NEW MEMBERS.

On the motion of Mr. WELLS, seconded by Mr. JOHNSTON, the following gentlemen were elected members of the Society: Messrs. William Dowling, Castle Street, Tralee, and Thomas Keawell, Ballyshannon.

The following were nominated for membership: Messrs. Andrew McClure, Hill Street, Newry; Abraham Porter, Irvinestown, co. Fermanagh; Miss Brenda Yates, Blackstoops House, Enniscorthy; Messrs. Albert Owen Wells, 52 Upper Sackville Street, Dublin; and James Joseph Kerr, Fermanagh Street, Clones.

The Council then separated.

Dr. H. W. WILEY's "POISON SQUAD" of twenty young clerks from U.S.A. Government offices are again said to have completed the period of experimental feeding on foods contaminated with preservatives, and the doctor has "drawn up a report to the Government." This has happened before, but on the present occasion we hear of the matter *via* Manchester.

Personalities.

MR. W. T. DAVIS, medicated lozenge and chlorodyne manufacturer, of Manchester, has been appointed a magistrate for the city of Manchester.

MR. W. ARMSTRONG STOREY, son of Mr. E. H. Storey, pharmaceutical chemist, 42 Castle Street East, Oxford Street, London, W., has just passed the Intermediate Science examination of the University of London.

MR. A. SERCOMBE GRIFFIN, of Messrs. E. M. de Souza & Co., Rangoon, Burma, has to relinquish his post and return to England by doctor's orders. He is suffering from tropical "sprue," but is promised a complete recovery on returning to the West.

MR. C. JOHNSON AVERY, joint Hon. Sec. of the Leicester Chemists' Association, acted as Hon. Sec. to a pageant held last week on behalf of the Leicester Cripples' Guild. Mr. Avery acted as stage manager, besides taking part in the pageant as King Richard the Third.

MR. W. H. GOY, chemist and druggist, 17 Battersea Rise, Clapham Common, London, S.W., has had two of his photographs accepted for the International Exhibition of Photography (Belgium Salon) now being held at Amsterdam. Mrs. Goy has also had one of her works accepted.

The following appointments of honorary physicians and surgeons to the King are announced in the "London Gazette":

David W. Finlay, Esq., M.D., F.R.C.P., London, Professor of the Practice of Medicine in the University of Aberdeen, to be one of the Honorary Physicians to His Majesty in Scotland, in the room of Sir Thomas McCall Anderson, M.D., deceased.

Sir William Macewen, F.R.S., M.D., Regius Professor of Surgery in the University of Glasgow, to be one of the Honorary Surgeons to His Majesty in Scotland, in the room of Sir Patrick Heron Watson, M.D., deceased.

James Little, Esq., M.D., Regius Professor of Physic in the University of Dublin, to be one of the Honorary Physicians to his Majesty in Ireland, in the room of Sir John Thomas Banks, K.C.B., M.D., deceased.

William Black Alexander, Esq., to be Surgeon Apothecary to his Majesty's Household at Holyrood Palace.

We regret to learn that the latest reports regarding the health of Lord Tweedmouth, the Lord President of the Council, are of a very unfavourable character, it being stated that there is no possibility of his Lordship being able to resume his official duties at the Privy Council. His resignation of the office, which he has held since he was succeeded at the Admiralty by Mr. McKenna, will probably be tendered to the Prime Minister before the end of the year.



PHARMACY LABORATORY IN LIVERPOOL UNIVERSITY.

The University of Liverpool is specialising in pharmaceutical subjects under the guidance of Mr. Prosper H. Marsden, who now holds eight distinct lectureships of the University, viz.: (1) Materia Medica; (2) Pharmacy for Minor students; (3) Materia Medica for the Major men; (4) and (5) Materia Medica and Pharmacy for the veterinary students; and (6) and (7) the same subjects for medical students; (8) Pharmacy for the dental course. The pharmacy laboratory has benches for twenty-four students.

Births.

GAZE.—At 10 The Avenue, Highams Park, Essex, on August 9, the wife of W. E. Gaze, chemist and druggist, of a son.

McEWEN.—At 17 Craven Road, Hyde Park, London, W., on August 5, the wife of William McEwen, chemist and druggist, of a son.

Marriages.

HANNA—EAKIN.—At Rutland Square Church, Dublin, on August 4, by the Rev. Samuel Duncan, assisted by the Revs. Dr. Logan (brother-in-law of the bride) and James Andrews, B.A., Thomas Hanna, J.P., registered druggist, Carrickmacross, to Maud, younger daughter of Mr. Nathaniel Eakin, Carrickmacross.

LEITCH—GARLAND.—At Christ Church, Parson's Green, London, S.W., on August 8, by the Rev. A. H. Swann, vicar, David, eldest son of the late David Leitch, chemist, Greenlaw, Berwickshire, to Margaret Mary (Daisy), eldest daughter of the late Mr. T. J. Garland, late of Berry House, Hersham, Surrey.

Deaths.

BAYNES.—At Huret House, Hull, on August 9, Mr. James Baynes, F.I.C., pharmaceutical chemist, aged sixty-three. Mr. Baynes had been public analyst for Hull for about thirty years, and in addition held the official appointments under the Sale of Food and Drugs Act for the East Riding County Council (Beverley, Hull, Kingston-on-Hull, and York), Scarborough, Grimsby, Lincoln, Louth, Hanley, and Soke of Peterborough, and was agricultural analyst to the boroughs of Hanley and Kingston-on-Hull. Mr. Baynes was a Freemason of the Humber Lodge. He died from heart disease and leaves a widow and two children.

CALVERT.—At Belle Acre House, Belper, on August 8, Mr. James Calvert, pharmaceutical chemist, aged ninety. Mr. Calvert commenced business at Belper between sixty and seventy years ago, coming from Durham, and was the oldest tradesman and male inhabitant, besides being a member of the Belper Board of Guardians for seventeen years. Death was due to senile decay.

GATENBY.—At Bridlington on July 28, Mr. Robert Gatenby, chemist and druggist, aged fifty-eight.

PISSEY.—At Paglesham (Essex), on July 31, Mr. W. F. Pissey, aged seventy years, who was formerly in business as a chemist and druggist in High Street, Rayleigh, but retired several years ago. He was a prominent Freemason.

REID.—At Chatsworth, New Southgate, N., on August 9, Ernest J. Reid, aged fifty-four years. Mr. Reid was senior partner of the firm of E. J. Reid & Co., Basing House, Basinghall Street, London, E.C. He was born at Alton and came to London in 1874, entering the firm of Messrs. Burgoyne, Burbidges & Co., Coleman Street. Here he passed through several departments and had charge of the "Magazine of Pharmacy" for some years. Mr. Reid left Burgoyne's some ten years ago to found a firm of advertising agents, in which he retained a connection with the drug-trade, being, among other things, agent for Samson's Tonic. The portrait of Mr. Reid, which is given here, is taken from a group photograph of the heads of departments at Messrs. Bur-

tuberculosis some years ago, and although by careful living had managed to stave off the disease, he became seriously ill during a voyage to New York, and soon after he returned to this country a further attack of hæmorrhage came on and proved fatal. Mr. Reid was a bachelor. The funeral took place from Friern Barnet Parish Church on August 12. The firm of Messrs. E. J. Reid & Co. is being continued by Mr. H. Wilkins, the surviving partner.

TRAPP.—At Gunnersbury recently, Dr. Julius Trapp, Imperial Russian Privy Councillor, Professor Emeritus Academicus, and Director der Pharm. Gesellschaft, at the advanced age of ninety-three. Dr. Trapp, who had a distinguished career, was a Knight of several Russian orders and was a member of many learned societies, being elected an honorary member of the Pharmaceutical Society of Great Britain in 1875. His "Guide to Pharmacognosy" was the first book written on the subject in the Russian language and was one among the many works from his pen.

WILSON.—At the Knowle, Coppice Drive, Harrogate, on August 5, Mr. John Herbert Wilson, J.P., pharmaceutical chemist, aged fifty-five years. Mr. Wilson was a virile personality, and although not well known among the *habitués* of pharmaceutical meetings, since his sympathies lay more on the commercial side of pharmacy, by his intimate acquaintances he was recognised as no mean scientist, and as a pharmacist the high position of the two pharmacies under his care at Harrogate provide ample testimony to his attainments. He was a native of Harrogate, and was born at the West Park Pharmacy, facing the Stray, founded by his father, Mr. John Wilson. He was apprenticed in 1868 to a chemist in a London suburb, and after taking the Minor in 1871, and the Major in 1872, joined



Messrs. Savory & Moore's Bond Street establishment as an assistant. From thence he returned to Harrogate to aid in his father's business. A branch at James Street was opened afterwards, and he conducted both businesses until their formation into a limited liability company under the title of "Wilson's, Ltd.," retaining the position of managing director until a few years ago. The success of Mr. Wilson as a business man is shown by the number of companies including him on the board of directors. Besides interest in hotels and theatres, he became chairman of Bleasdale, Ltd., fifteen years ago, and was a founder and chairman of Camwal, Ltd. Mr. Wilson found time among his multitudinous duties to devote time to the public weal. He was a member of the Harrogate Town Council for many years, and became Mayor of Harrogate in 1896. He also represented Harrogate on the West Riding County Council, and was made a magistrate in 1894. He was chairman of the Harrogate Infirmary and prominently connected with the erection and success of the Harrogate Royal Baths. He retired from active business five years ago, but retained several directorships. Mr. Wilson suffered from cancer of the œsophagus, and about Easter took a voyage in the Mediterranean without deriving any benefit. An operation was performed to enable him to take food, but no radical operation could be undertaken. Mr. Wilson faced the inevitable as a stoic, and thus died as he had lived. The end came suddenly during the night, he practically passed away in his sleep. He leaves a family of two sons and a daughter. The interment took place at Harlow Hill Cemetery, Harrogate, and was attended by a large gathering of people. In addition to the family mourners, the Corporations of Harrogate and Knaresborough, the Borough Bench, Harrogate Infirmary, and other institutions were represented, Mr. Handford representing the Harrogate Pharmaceutical Society.



goyne taken two years ago, Mr. Reid maintaining an intimacy with his old colleagues. He developed symptoms of

Legal Reports.

Pharmacy Act, 1868.

UNQUALIFIED SELLER.

At the Salford County Court on August 10, before Judge Shireess Will, K.C., Edmund McDonagh, 2 Woodland Terrace, Grove Street, Higher Broughton, was sued by the Pharmaceutical Society for the penalty incurred in selling morphine, which formed part of the ingredients of "Kay's Compound Essence of Linseed." Mr. Robson (Messrs. Robson & Risque) appeared for the plaintiffs, and Mr. Cunningham (Messrs. Field & Cunningham) represented the defendant. Mr. Robson said the offence was committed on May 19, defendant being an unqualified chemist's assistant in the employ of John L. Smith, Ltd., who have a number of shops in Salford and Hulme.

Mr. Arthur Holmes, employed by the Society, gave evidence of purchasing "Kay's Compound Essence of Linseed" and a bottle of glycerin. Witness sent the Kay's Essence to Mr. Thos. Tickle. He ascertained the name of the defendant from his wife. Mr. Thos. Tickle, analyst to the Society, said he analysed the contents of the bottle and found them to contain morphine. For the defence, Mr. Cunningham said he did not know whether they would consider the evidence sufficient to establish the identity of the defendant.

The Judge : I think there is a *prima facie* case.

Mr. Cunningham : It is exceedingly difficult for the defendant to come here because he is in a situation. It is manifestly unfair that a man in the position he occupies should be deliberately tempted by this Society to do something against the law.

The Judge : He is not tempted at all. It is the only way they can do it.

Mr. Cunningham : I respectfully submit it is manifestly unfair that the defendant should be placed in this position. He is capable of selling poisons, but owing to difficulties he has not been able to qualify. The course for the Society to take would be to amend the Act so as to bring in the employer. They could get legislation passed.

The Judge : I cannot go behind the legislation. I am not here to legislate. There is an offence against the statute.

Judgment was given in favour of the Society for 5*l.* and costs.

Merchandise-marks Act.

AERATED WATER BOTTLES.

At the Shrewsbury Police Court on August 8, Scott Davis, trading as Bettleson & Son, was fined 3*l.* 1*s.* 6*d.*, including costs, for selling aerated water in a bottle marked with the trade-mark of Camwal, Ltd. The prosecution was undertaken by the Birmingham Mineral-water Makers' Protection Association. It was pleaded that a mistake arose owing to the system of collecting.

Sale of Food and Drugs Acts.

MERCURIAL OINTMENT.

In the Southern Police Court, Dublin, on August 7, before Mr. Swift, Messrs. Haydock & Co., chemists, Cork Street, were summoned for selling mercurial ointment which had only 4.9 per cent. of mercury in it, whereas the standard prescribed by the British Pharmacopœia is 44.48. Mr. T. F. Burke, solicitor, appeared for the prosecutors (the Corporation). Sir Charles Cameron said that the law would be complied with if the sellers of the ointment would label the weak quality for what it was, and the strong quality for what it was. Alderman Dr. J. C. McWalter, pharmaceutical chemist, in giving evidence, said that there were in the trade two well-recognised qualities of mercury ointment—one a weak kind and the other strong. Chemists supplied the strong quality only on a doctor's certificate or for use on animals. Mr. Swift imposed a fine of 1*l.*

IRON PILL.

DR. HENRY LIENS, carrying on business as Schacht, Warner & Co., 55 Fore Street, London, E.C., was summoned at the Guildhall for selling iron pills which were found to be

deficient in ferrous carbonate to the extent of 36 per cent. In reply to Mr. Kirby, who defended, Inspector May said it was not Dr. Liens who sold the pills. Previous to this many samples had been taken, but this was the first time he had been summoned. Mr. Kirby said that this is a shop much patronised by Germans, and defendant himself is a German. In Germany the standard of the iron pill is much below that of the English, and having to supply German customers from German prescriptions, he had to stock the pills. These are something like 30 per cent. below the strength of the English official pill. Perhaps the German constitution does not require so much iron as the English—(laughter)—that he could not say, but defendant stocked both the English and the German pill, and an assistant on this occasion supplied the wrong article. He would take care for the future that these pills are kept in different places. Alderman Howse (the Magistrate) : It appears to me that your client takes a considerable risk in selling German pills at all in this country. There have been several cases in the City recently in which troubles have arisen owing to the mistakes of assistants. Mr. Kirby : This is not one of those instances in which harm might be done to anyone. The Alderman : No, but this pill is so absolutely deficient. When anyone buys a certain drug he hopes for a particular benefit, and here he loses 30 per cent. of what he should get. These cases are serious, and I must impose a fine of 2*l.*, and 17*s.* 6*d.* costs.

County Court Cases.

CLAIM AGAINST EXECUTORS.

At Blackburn County Court on August 7 a chemist's traveller named Joseph Makinson, of 73 Carlisle Street, Blackburn, sued John Nelson, John Charles Rawlinson, and Jessie Battersby, of Southport, executors and trustees of the late William Butterfield, chemist and druggist, of Novas, Blackburn, for 26*l.* to which he alleged he is entitled. Mr. Overton, who represented the plaintiff, said Makinson was in the employ of the deceased chemist, as also was Mr. Butterfield's nephew, Richard Allsup, for many years as travellers. He asserted that a verbal contract was entered into between the two men and their employer on or about March 2, 1895, whereby it was agreed that Mr. Butterfield should withhold a sum of 2*s.* a week from each of the men's wages to cover one-third each of the amount of bad debts contracted by them with any customers, and also to cover one-third of the expenses of any prosecution which their employer might incur on the sale by them of tincture of rhubarb. It was also agreed that when the men left the employment of Mr. Butterfield such weekly sums so withheld should be returned to them, less one-third each of the amount of bad debts and prosecution expenses. Allsup left Mr. Butterfield's employ eight years ago and made no claim with respect to his share. On or about March 2, 1900, it was agreed between plaintiff and Mr. Butterfield that a sufficient sum of money had been withheld from his wages to cover any bad debts, and, in consequence, until the termination of his employment plaintiff was paid his full wages. He left the service of Mr. Butterfield in 1905, and the amount claimed is what plaintiff estimates he paid between March 2, 1895, to March 2, 1900.

Mr. Harry Backhouse, for the executors, claimed that the alleged contract is within Section 4 of the Statute of Frauds and must be in writing, and that the claim is barred by the Statute of Limitations.

Mr. Overton said the agreement with respect to 2*s.* per week arose out of the following letter sent to plaintiff and Allsup by Mr. Butterfield in 1895 :

For some time now I have been thinking that it's only right and just, seeing that you are getting so much, that you should each contribute something per week towards the bad debts which I find continually growing. I also feel it to be very unfair and unjust that I should stand the whole loss of everything. . . . My views are that you should each contribute weekly out of your wages the small sum of 2*s.* In view of the many recent prosecutions taking place in tincture of rhubarb, etc., I find it utterly impossible to make this preparation and sell it at 2*s.* 6*d.*, 2*s.* 9*d.*, or even 3*s.*, and allow you the usual commission on the same, which will most certainly have to be stopped unless we can agree as suggested. In the future, for tincture of rhubarb sold at less than 2*s.* 9*d.* or 3*s.* I will not be held responsible, and even at this price

there is no margin of profit, not to mention giving a commission also.

The men, said Mr. Overton, considered the letter and fell in with the suggestion. Allsup left in 1900, and is now in business on his own account as a chemist and druggist. When Makinson left the firm he sent the following letter to his late employer :

In a letter dated February 19, 1895, to myself and Mr. Richard Allsup you made certain suggestions in reference to bad debts, which you asked us to consider, as you said you could not stand them all yourself. We considered the matter, and decided to be responsible for one-third of any bad debts contracted by ourselves, but you illegally withheld from my wages 2s. per week from March 2, 1895, which you said was to cover any bad debts I made. Now, I consider that time enough has expired since I left your employment—which was June 3, 1905—for any bad debts contracted by me to have been shown, if there were any; therefore, not having had notice of such for me to investigate, I come to the conclusion that I made none. If you consider that I did, will you please forward them to me for investigation, and I will meet my share of the contract.

The Judge said that appeared to be a searching action, the object evidently being to ascertain what bad debts there were and apportion Makinson's proportion.

Mr. Backhouse said that Mr. Butterfield's intention probably was that if the men would pay 2s. each per week he would take the risk of all the bad debts there might be. The travellers were receiving their commission in the ordinary way, and it was obvious this was not to be the subject of account at an ultimate date.

The Judge : But I understood it was put in a separate fund.

Mr. Backhouse : It was not.

Mr. Overton : It was to have been, at any rate.

The Judge : But in your letter there is no suggestion that this money should be placed aside.

Mr. Overton : That was arranged afterwards.

Mr. R. Allsup gave evidence for plaintiff. He was with Mr. Butterfield, his uncle, twenty-seven years, but did not claim the return of his contributions. Makinson also gave evidence. He was employed by Mr. Butterfield for nearly thirty years.

The Judge, in giving judgment for the defendants, said the agreement entered into by plaintiff and the late Mr. Butterfield was that the plaintiff should contribute 2s. per week towards the bad debts and loss incurred through his customers, etc., and that the plaintiff's contribution should be limited to this amount. If there was any loss over and above the 2s. that was to be borne by Mr. Butterfield. Plaintiff having entered into this arrangement continued to receive his usual commission, and he received that commission on these terms. Plaintiff has failed to prove that he is entitled to any balance which may exist between the loss and bad debts and the 2s. per week he has allowed to be deducted from his wages.

Bankruptcies and Failures.

Re GEORGE GRANT, Chemist and Druggist, 50 Broughton Street, Edinburgh.—A trust deed has been granted on behalf of the creditors in favour of Messrs. George T. Clunie & Scott, C.A., 46 George Street, Edinburgh, who intimate that they will be in a position to divide the estate among the creditors on and after August 20.

Re WORLD'S ANTISEPTIC AMMONIA, LTD., 15 Upper Marsh, Lambeth, and Temple Yard, Temple Street, Bethnal Green.—A compulsory winding-up order having been made against this company, the statutory first meeting of the creditors and shareholders were held on August 11 at the Carey Street offices of the Board of Trade, Lincoln's Inn, London, W.C. Mr. W. J. Warley, Assistant Receiver, reported that the accounts filed under the liquidation showed liabilities 2,055l. 9s. 9d., against assets valued at 72l. 3s. 6d., a deficiency of 19,650l. 6s. 3d. as regarded contributories. The company was registered on June 22, 1906, with a nominal capital of 30,000l., and was formed to acquire the business of "World's Antiseptic Ammonia," previously carried on by Mrs. Jessie Tucker. The purchase consideration of 800l., payable as to 300l. in cash and the balance in shares, covered the goodwill, plant, and all other assets of the business, including the use of the name, and for a further consideration of 14,000l. in shares the company acquired the secret process of manufacture of World's Antiseptic Ammonia, and its ingredients and full

information to enable the company to manufacture same. On October 15, 1906, the company entered into an agreement with J. C. & J. Field, Ltd., appointing the latter sole agent for three years for the sale of the company's ammonia. A provision of the agreement was that the company should expend not less than 1,000l. per annum upon advertisements during the continuance of the agreement. This the company failed to do, and sales under the agreement had ceased to be made. The business of the company had been carried on at a large loss, and the failure was attributed to lack of funds. The liquidation was left in the hands of the Official Receiver.

Gazette.

Partnerships Dissolved.

BATT, T., and DENNY, F. W., oil and grease merchants, Leeds, under the style of T. Batt & Co.

WATSON, S. G., and RELTON, C. D., surgeons, Brighton and Hove, Sussex, under the style of Watson & Relton.

The Bankruptcy Acts, 1883 and 1890.

ADJUDICATIONS.

HELCKÉ, ARNOLD, and HELCKÉ, CASPAR DIEDERICK (trading in partnership as Helcké Bros.), Faversham, Kent, manufacturing chemists.

HEWITT, JOSEPH SAUNDERS, Rochester, Kent, chemist.

New Companies and Company News.

MODEL HOME SPECIALITIES, LTD.—Capital 1,000, in 1l. shares. Objects : To carry on the business of chemists, oil and colour men, dealers in chemical and other preparations, manufacturers of and dealers in paints, varnishes, enamels, and other commodities, known as "Model Home Specialities," etc. The first subscribers are H. W. McLaren, 30 Moorgate Street, E.C., C.A., and V. L. Edwards, 30 Moorgate Street, E.C., clerk. Private company.

A. SUFFOLK, LTD.—Capital 2,000l., in 1l. shares (1,000 6-per-cent. cumulative pref.). Objects : To take over the business of a combination starch manufacturer carried on by J. T. Windle at Harcastle Street, Peckham, S.E., as A. Suffolk. Private company. Registered office, Halifax Commercial Bank Chambers, Tyrel Street, Bradford.

BERENGER FRÈRES, LTD.—Capital 500l., in 1s. shares. Objects : To acquire the business carried on as Berenger Frères at 195 Upper Thames Street, E.C., by A. B. Starke, and to carry on the business of manufacturers, importers, agents, essential-oil merchants, manufacturers of and dealers in dry shampoo, brilliantine, fancy soaps, and druggists' sundries, etc. The subscribers are : A. B. Starke, 195 Upper Thames Street, E.C., chemical merchant, and W. J. Moss, 35 Bread Street, E.C., tailor, taking one share each. Private company. The first directors are A. B. Starke (managing director) and W. J. Moss. Qualification, 10 shares. Registered office, 195 Upper Thames Street, E.C.

MORTGAGES AND CHARGES.—The following have been registered : A. J. Caley & Son, Ltd., mineral-water and chocolate manufacturers, etc., Norwich. Particulars of 80,000l. debenture stock, created by resolution of October 10, and secured by a trust deed, the amount of the present issue being 6,000l., secured on freeholds, leaseholds, plant, and general assets. Trustees : E. G. Buxton and E. Wild.—*Barrenchea Nitrate Co., Ltd.* A memorandum of satisfaction in full of a charge, dated February 23, 1904, securing 30,000l., has been filed.—The following are abstracts of the total mortgages and charges of the respective companies outstanding on July 1, 1908 : W. Woodward, Ltd., proprietary medicine manufacturers, Nottingham. Mortgage, dated October 7, 1890, securing 1,200l., charged on land with premises thereon in Chaucer Street, Nottingham.—*Stafford Allen & Sons, Ltd.*, drug millers, London and elsewhere. Debentures, dated July 31, 1899, securing 25,000l., and mortgage, dated August 3, 1894, securing 600l.—*Weldon & Wilkinson, Ltd.*, bleachers, manufacturing chemists, etc., Nottingham. First mortgage, dated November 5, 1901, securing 6,500l.

MR. JOHN CLEWORTH, 56 Ducie Street, Greenheys, Manchester, produces "My Chemist's Monthly Magazine," which is fast becoming a feature of the district. Mr. Cleworth devotes space to advertising his specialities, and has also a number of tradesmen's advertisements. Each number contains a price-list of proprietary articles.

Observations and Reflections.

By "Xraysr."

The Cape Chemist

who has extracted from a Law Court the recognition of razor-paste and combs as articles coming legitimately within the scope of a chemist's business has at least succeeded in exposing the crudity of the Act under which the proceedings against him were taken. The question which the Judge put to himself was whether a chemist and druggist was acting "as such" when he sold these sundries. It was, perhaps, easy to deal with the razor-paste; most judges would probably have admitted that to be a chemical. But pedantic ones would certainly have taken the opportunity to display their wit by asking if a comb was either a drug or a chemical, and most likely would have ruled it out of the rubric. This particular Judge, however, having satisfied himself that combs had been sold by chemists for at least a century, which would be "time immemorial" in Cape history, declined to de-domicile them. But it was only a chance which gave Mr. Armstrong such a reasonable arbiter. The statute, it appears, makes no attempt to define a trade, but requires a separate licence to be taken for each business. In these days when the boundaries of businesses, like those of sciences, are being obliterated, such legislation invited—indeed, compelled—litigation, and the gentlemen responsible for such loose drafting ought to be disqualified from further attempts at law-making.

A Tax on Shops

is not original with Cape Colony. The Plantagenets used to claim a tenth or more or less of the value of traders' stock when they were in urgent need of money. Henry VIII. altered this to a regular tax on "movables," including not only stock but furniture, cash in hand, and any other personal property. This did not last, and from the beginning of the eighteenth century there was a good deal of complaining that the commercial classes were growing rich and were not duly taxed. This feeling led to a number of Excise taxes, licences, and similar duties, and in 1759, when the Treasury was particularly exhausted by the conquest of Canada and of India, and by the Seven Years' War on the Continent, Legge, who was Chancellor of the Exchequer, proposed in the Budget of that year a tax on shops. He intended to impose one uniform tax on all shops, great and small. The attempt was defeated, and is chiefly notable historically on account of the comments of Adam Smith on the proposal. That great economist was opposed to such a tax, but argued that if it were imposed it must be equal on all shops, for "it would be impossible to proportion it with tolerable exactness to the extent of the trade carried on without such an inquisition as would be altogether insupportable in a free country." Then he went on to show how the tax would tend to crush out small traders and confer a monopoly upon the few large ones, who would combine and raise their prices so as to make the public pay not only the tax but a considerable extra profit for themselves in addition. Regardless of Adam Smith, whose work was published in 1776,

Pitt Imposed the Tax

in 1785, but graduated the charge from 6d. to 2s. in the pound on the assessed annual value of the premises. Bakers' shops were specially exempted. Pitt estimated that the tax would yield 120,000*l.* a year; the highest income he actually got from it was 56,000*l.* The shopkeepers of London fought against this imposition with peculiar vigour, and secured the powerful assistance of Fox

as their advocate in Parliament. Pitt succeeded in maintaining his tax through three consecutive subsequent years, but in 1789 he abandoned the contest, admitting that the verdict of those chiefly concerned was opposed to the view which he had always held, that this was a tax which the consumer would pay in the long run. That was the end of the special tax on shops in this country. But a few words ought to be added concerning

The French "Patentes,"

a similar tax which has existed for more than a century and yields between six and seven million pounds sterling annually. The "patentes" were created by the Constituent Assembly in 1791, when the practice of all trades and professions was declared to be open and free to everyone, subject to the payment of this duty and to the observance of such conditions as should be prescribed. At the same time the guild charges and the "twentieths of industry," which caused much irritation and produced but meagre results, were finally abolished. The Directory in 1799 elaborated the law of patents, classifying the professions liable, and varying the impositions according to the populations of the localities where these were carried on. They created both fixed and proportional duties, the latter varying with the rent, of which it was generally one-tenth. The "contributions" remained as they had been established by the Directory for nearly fifty years, but in 1844, and several times since, revisions have been made as changing methods of business required. At first one patent covered any number of industries or businesses carried on by the same person or firm, but when big bazaars and universal providers came into existence a commission considered the position, but reported that to charge for separate businesses would oppress little traders worse than big ones. In the result a distinction was made by proportioning the patent to the rent, the number of employés, and making additions for branch shops. Civil servants, agriculturists, philanthropic institutions, actors, artists, professors, and journalists have always been exempt from the patent; and doctors and lawyers have also been exempt under some of the Acts, but I believe they are not now. No one who has no capital engaged in his business, or who does not profit by the labour of others, pays for a patent.

Passing Comments.

Mr. Storror's resignation of his seat on the Pharmaceutical Council takes from that body one of its most judicious and least nationally prejudiced members. As such, as they say at the Cape, he did not represent all Scotch pharmacists.

The Great Northern Railway publishes a placard showing an Alpine scene described as the Northern Heights of London, in which Muswell Hill figures as a sort of Matterhorn. It is reported that Its Eminence is just now swelling visibly with justifiable pride and with silver bullion, another of the pharmaceutical medals of that metal, making the fifth this year, having been requisitioned for this locality.

I have no idea what the facsimile prescription of last week was meant for. It looked like bacilli q.s. and uric acid 8 oz. for sixteen doses. It is not to be desired that anyone should die in consequence of one of these illegible prescriptions, but it would be to the public advantage if some litigious person should have a week's discomfort from one, and "go for" the writer.

The Pharmaceutical Council must be the place to spend a happy day if, as the Treasurer asserted last week, the hour he had just passed had been the most depressing he had experienced in that chamber for twenty-seven years. During that period he must have sat through many hours of deadly unanimity, and it might have been supposed that a little breezy opposition would have been refreshing. But tastes differ.

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Editorial Comments.

The Qualification Problem.

BEFORE the time for another Educational Number of THE CHEMIST AND DRUGGIST comes round radical changes in the practice of pharmacy in Great Britain may have been determined by Parliament. It is proposed in the Bills which will be considered by the House of Commons in October that on and after January 1, 1909, every chemist's shop in Great Britain shall be managed by a qualified chemist, and it is also proposed to give the Pharmaceutical Society powers for making the qualification of chemists more expensive and, in all likelihood, more difficult than at present. The fact that there is scarcely a dissenting voice against these proposals—so diametrically opposed to each other—makes them all the more significant of the trust that our legislators, or rather the initiators of legislation, have in things righting themselves. Sooner or later, it has been found in this country, an exceptional demand for a commodity is met by an adequate supply, provided the price offered is high enough. We are not disposed to say that this will not also occur when qualified branch managers become a legal necessity, but, at present, we think that chemists are not prepared for the contingency, nor is the market ready with the supply. Qualified assistants are scarce, and the qualification machinery has seriously reduced the output during the past seven years. There is, therefore, prospect of a managerial famine when legislation on present lines is accomplished. Several things may happen in consequence. First, a considerable number of small branches which could not pay the salaries of qualified managers and a profit to their owners will shut up, or will be disposed of, for the proposed law will not allow them to be continued under the name and qualification of their owners, even though poisons are not sold or dispensed in them. Their owners should have the right that the man in the street has—of carrying on the shops as drug-stores—but the proposal is that wherever the business of a chemist and druggist is carried on—a pharmaceutical chemist, chemist and druggist, company, or firm—the premises must be in charge of a qualified person. What the business of a chemist and druggist or pharmaceutical chemist is has still to be defined, but for present purposes it suffices to consider that it is the kind of business usually carried on by chemists and druggists and pharmaceutical chemists. It is this that will require qualified supervision. On the first point, therefore, we may expect to see a diminution in branch shops. The second thing that may happen, through the change is an increased demand for qualified assistants, accompanied by higher remuneration; and this is the principal point of these comments, since it is directly related to the educational requirements which are outlined in this issue. During the past seven years the supply of registered apprentices has been remarkably reduced in consequence of the Pharmaceutical Society having discontinued its own Preliminary examination and substituted for it the certificates of other examining bodies over

which it has no control. In the seven years there has been less than two normal years' supply of registered students. At the same time the standard of the Qualifying examination has been well maintained, and, in spite of the fact that we are now supposed to be getting a better educated class of men, the pass percentage in the Minor has not materially improved, but the total passes during the past four years have been about 20 per cent. less than the average since 1890. In 1905 the number that passed was 468, in the following year 400, last year 411, and in three examinations this year 295. We dealt fully with this point in our last Educational Number. It is now apparent that there is no immediate prospect of numerical improvement, but the reverse under present conditions; and, assuming that the Pharmaceutical Examiners will not grease the path to qualification, the chief incentive for young men to "hurry up" will be increased remuneration. This is the best answer to the question sometimes heard, Is it worth while qualifying?

Foreign Trade in July.

THE improvement shown in our foreign trade in June, as indicated by the Board of Trade returns, was not maintained last month, there being an all-round shrinkage in imports and exports. The decline in exports amounted to 6,747,000*l.* or 16.7 per cent., this bringing the total decrease for the seven months of this year to 23,071,000*l.*, or 9.3 per cent. In imports the loss is smaller, amounting to 5,435,000*l.*, or 10.4 per cent., while for the seven months the total shrinkage is 35,493,000*l.*, or 9.1 per cent. The complete totals are as follows:

		July 1908.			
		£		£	Decrease
Imports	...	46,773,035	...	5,434,739	
Exports	...	33,705,725	...	6,746,606	
Re-exports	...	6,310,928	...	1,077,363	
		January to July.			
Imports	...	345,058,913	...	35,492,658	
Exports	...	223,609,120	...	23,070,680	
Re-exports	...	45,607,259	...	13,330,268	

Of the total decrease of 5,435,000*l.* in imports in July more than half is in raw materials, which are 2,475,000*l.* lower. Otherwise the decline applies to almost every item, including one of 568,740*l.* in oil-seeds, gums, etc., and one of 143,000*l.* in drugs and chemicals, our imports in July amounting to 829,876*l.* Food, drink, and tobacco are down by 1,303,000*l.*, and we took less of foreign manufactured goods by 1,578,800*l.* Of the diminution in exports 6,106,500*l.* is in manufactured goods, to which every item, with two insignificant exceptions, contributed. The shipments of textile fabrics and yarns are particularly noticeable for a shrinkage of 2½ millions sterling, and in iron and steel there is a reduction of 1,171,000*l.* Chemical and drug shipments were less by 112,858*l.* on a total of 1,251,084*l.*, but as compared with two years ago the figures are 57,708*l.* to the good; for the seven completed months of this year the exports of similar goods have reached 9,957,477*l.*, or 453,500*l.* less, but again as compared with the more normal period of 1906 there is still a surplus of 737,200*l.* It was not to be expected that July would be an active month for drugs and chemicals, but there is little reason to grumble at our exports of medicines, which are but 18,000*l.* less for the month, as compared with the high-water mark of 1907. Quite a revival took place in the shipments of British quinine in July, the total amounting to 125,426 oz. (5,467*l.*), or 36,193 oz. more; the exports of foreign make of quinine also improved from 8,738 oz. to 14,679 oz. (465*l.*), as also did the imports by 80,000 oz.

On the other hand, a slump has taken place on the seven months' imports of quinine, the totals so far amounting to 594,498 oz. only, as compared with 1,662,606 oz. in 1907 and 1,215,716 oz. in 1906. As for exports of British-made quinine this year there is a diminution of 135,326 oz., the shipments amounting to 437,865 oz. Few look for a revival in trade in this the premier holiday month, so that patience must be exercised until the fall of the year, when the tide, it is to be hoped, will turn.

Joint-stock Companies in 1907.

THE annual report by the Board of Trade on the working of the Companies Acts, 1862 to 1900, is of particular interest as marking the point of departure for the new legislation touching joint-stock companies, which is referred to at length by Mr. H. Llewellyn Smith in his letter submitting the report to the President of the Board of Trade. During the year 1907 4,810 new companies were registered in England and Wales, from which are to be deducted 1,795 companies removed from the register under the provisions of the Companies Acts, 1880 and 1890, leaving the net increase of joint-stock companies during the year at 1,050. The report shows that the total estimated loss to creditors of companies wound up in 1907 was 2,607,788*l.*, the total loss in the last ten years being no less than 39,115,498*l.* Since 1862—the date of the passing of the Companies Act—102,861 companies, with a total capital of 6,918,805,970*l.*, have been registered in the United Kingdom. A footnote to the report mentions that in the year 1869 some ambitious individuals registered a company with a capital of 100,000,000*l.* but its paid-up capital appears never to have exceeded 200*l.* "There seems," says the report, "to be an increasing tendency to trade with debenture capital only, and with little or no subscribed share capital. By this means a trader's capital is in effect preferred, in case of the failure of his business, to the claims of the unsecured creditors." The Controller of the Companies Department refers to one concern with a nominal capital of 100,000*l.*, which started on the small sum of 26*l.* 12*s.* 4*d.* in the office till, and nothing in the bank. The company, as a matter of fact, began business on an overdraft, which was increased before very long to nearly 54,000*l.* The only share capital that was subscribed for was 7*l.* in seven 1*l.* shares, of which 6*l.* still remains unpaid. It is yet too early to judge of the prospects of success of the Limited Partnerships Act, nor can any sound opinion be ventured as to whether the mercantile community are likely to make much use of it or not. In its favour it may be remembered that the system of *commandite* partnerships or companies (which the Act in principle adopts) has proved both popular and useful in every country in Europe and in the United States. The questions seem to be whether limited companies have taken so deep a root in England as to diminish the chances of success of a system of limited partnerships. If the Limited Partnerships Act is successful its success will probably be gained at the expense of the smaller class of companies. Some, perhaps many, of the small concerns which are annually turned into limited companies may prefer to register themselves as limited partnerships. It has been pointed out that there has been a very rapid growth during recent years in companies with small nominal capital. If the result of the Limited Partnerships Act is a decrease in the number of these small companies, and a corresponding growth in the number of limited partnerships, the result will be all to the good. The system of limited companies has, without doubt, done much for the trade of the country in the past, but it must be admitted that the system is far

better suited to large concerns than to small ones. The management of every limited company must feel the lack of the spur which personal responsibility alone can give.

Mexican Trade.

THE general industrial and trade conditions existent to-day in Mexico are such as should command more attention from British exporters than is the case at the present time. This is the plea brought forward by the British Consul at Vera Cruz, who states that there was a constant growth in the commercial activity in his consular district last year. Our trade in chemicals, however, has largely fallen off, Continental manufacturers now heading the list. Every year Mexico is increasing her purchases of such goods, her imports of chemicals and drugs last year being valued at 631,666*l.*, against 534,625*l.* in 1906 and 283,271*l.* in 1905. No details are furnished as to the chief items, but soda compounds and other heavy chemicals are largely obtainable from England. The foreign trade of Mexico last year was worth practically 48,000,000*l.*, or 24,700,000*l.* imports and 23,200,000*l.* exports. Naturally the United States takes by far the larger proportion of exports and furnishes the bulk of her imports. Of the share of Mexico's imports furnished by European countries, Germany is first with 2,433,154*l.*, followed by the United Kingdom with 2,349,856*l.*, France with 1,756,325*l.*, and Spain with 794,100*l.* Notwithstanding the close proximity of the United States, Mexico's trade with European countries shows an increase much larger than that accredited to the United States, as we note that in the fiscal year 1907 Germany increased her trade by 374,548*l.*, the United Kingdom by 339,774*l.*, France by 145,662*l.*, and the United States by 83,162*l.* only. It is to be regretted, however, that the United Kingdom has dropped from second to third place, although the margin is extremely slight. The Consul gives some useful hints as to how British trade and interests may be promoted. He comments on the various methods employed by (1) commercial travellers, (2) resident agents or business houses dealing in the goods handled by the exporter, and (3) manufacturers' agents. Of the three classes the second, that of firms in the retail or jobbing business, is the most common, but in his opinion the least effective. At best their work is but local, and they often accept an agency with the view of preventing their competitors securing it, and since in Mexico there are few British houses, these agencies go to foreign firms whose preferences are for goods of their own country. Failing a travelling representative, which is costly, a resident manufacturers' agent has been found one of the most successful, but it is strongly recommended that the person employed should be a British subject. Mexicans are by no means averse to British goods, and the reason why we do not do more business with this potential market is because of the lack of thorough and effective representation.

As regards Mexico's many economic products, jalap, sarsaparilla, vanilla, and chicle are of chief interest to us, but the latter, the trade in which has become large and prosperous, is the only one commented on. Vanilla is a valuable export but fluctuates considerably, the value in 1905-6 being 402,000*l.*, but only 261,200*l.* in 1906-7; and of jalap the exports last year amounted to 100 tons, valued at 3,624*l.*, as compared with 114 tons, valued at 3,682*l.*, in the preceding year.

There is no doubt that many of Mexico's products are in their infancy, and are certain to have considerable growth with the advent of transport facilities.

Failures in 1907.

The annual report of the Inspector-General in Bankruptcy for the year 1907 shows a considerable decrease in the number of failures in 1907 as compared with the number for the preceding year. There were 325 fewer receiving orders and 153 fewer deeds of arrangement, making a total decrease of 478 cases. The estimated liabilities and loss to creditors were smaller under receiving orders, but greater under deeds, than in 1906. Combining the figures for receiving orders and deeds of arrangement, the aggregate estimated liabilities are found to have exceeded those for 1906 by upwards of 760,000*l.*, while the net estimated loss to creditors was greater in 1907 than in the previous year by 460,000*l.* It is gratifying to note, however, that the number of receiving orders and administration orders under Section 125 made by "chemists and druggists" was 26 only, as compared with 29 in the previous year. The number for "doctors of medicine, surgeons, etc.," was 23 for 1907, as against 27 for 1906. A comparative table showing the total failures under Bankruptcy and Deeds of Arrangement Acts puts the total for "chemists and druggists" at 55, with total liabilities of 58,828*l.*, a decrease of 18 in number and 2,590*l.* in money as compared with 1906. The total for "doctors of medicine, surgeons, etc.," was 30, an increase of one only, but the total liabilities increased by 15,615*l.*

Free Sugar.

An Order in Council was published in the "London Gazette" of August 6, the effect of which is that from September 1 next this country will be free to import sugar from Russia, Denmark, Spain, and the Argentine Republic in spite of the Sugar Convention. The Board of Trade have also issued an official announcement as to the effect of the Order in Council on the importation and subsequent exportation of sugar. It says:

As a consequence of the issue of this Order in Council it will be possible after September to import sugar freely into the United Kingdom from any country.

Importers of sugar intended to be subsequently exported from the United Kingdom (whether in a raw or refined condition) to any of the States parties to the Sugar Convention should continue to obtain certificates of origin in respect of all such imported sugar, in order to enable the Customs authorities to issue the necessary certificates on exportation to entitle such sugar to obtain the benefit of the minimum Customs duties on importation into the territory of any of the contracting States. No such certificates will be required on the exportation of sugared products.

Mortality in the Drug-trade.

Every three years a supplementary part of the Registrar-General's report is issued dealing with the mortality in certain occupations. The volume contains a large number of curious statistical facts as to the comparative healthiness of different occupations. In regard to chemists and druggists the last census showed 26,276 persons under this entry, 2.3 per cent. more than at the previous census. As compared with the standard for all occupied and retired males the death-rates at the several age groups fluctuate somewhat. The comparative mortality figure is 999, which is practically equal to the standard. Chemists and druggists show an excessive mortality from alcoholism and liver-disease, as well as from nervous diseases, Bright's disease, and suicide, but from every other cause they experience a mortality which is below the standard. Chemists suffer less than the average from influenza and respiratory diseases, and their liability to fatal accident is only three-fifths of the average. Among chemical manufacturers, which includes 23,254 persons, the mortality from respiratory diseases is considerable, nearly four-fifths above the standard; influenza, cancer, circulatory diseases, and accident are also more fatal than the average. Against the excess of mortality from respiratory diseases must be set the fact that the mortality attributed to phthisis hardly exceeds half the standard.

Reviews.

Pharmaceutical and Chemical Problems and Exercises, with Explanatory Text, including Pharmaceutical and Chemical Arithmetic, Weights, and Measures, Specific Density and Specific Volume, and Chemical Notation and Nomenclature, Chemical Equations, Problems in Oxidation and Reduction, and Stoichiometry, together with the Elementary Theoretical Chemistry necessary to their Understanding. Intended as Aid to Students, Teachers, and Examiners. By OSCAR OLDBERG, Pharm.D. 9 $\frac{3}{8}$ x 5 $\frac{5}{8}$. Pp. 369. 4th ed. (Chicago: Medical Book Co.)

THE title indicates, with the exception of a Part on solution and mixtures, the main subdivisions of the book. The problems and exercises in Parts I. to VI., as mentioned in the author's preface, may be undertaken without preliminary chemical training, and are designed to give students the required amount and variety of practical exercises in pharmaceutical arithmetic available in a textbook, since, the author considers the demand on the teacher is otherwise greater than he can bestow. Over 700 exercises, with numerous examples and rules, are given, but to the English student they do not appeal greatly, partly on account of the different usage of weights and measures in the United States, and, secondly, because of the complexity of rules and formulæ employed in the endeavour to save the student any real brainwork for himself; but for the student seeking practice and new methods on chemical calculations the second portion on elementary chemical theory is exceedingly interesting on account of the application of the "atomic combining value" in the place of "valency." In the former term, in addition to the chemical combining-power which is usually indicated by the term "valency," the kind of combining-power, whether negative or positive in character, corresponding to the electro-chemical theory is also taken into consideration, and the true combining-power is given as the algebraic sum of the positive and negative bonds. The application of this idea to nomenclature, equations, oxidation and reduction, and the periodic system is well worthy of study by the student as a mathematical consideration of the above divisions as applied to chemistry. To the advanced pharmacy student the book provides a fount of information on the subjects dealt with ordinarily not readily obtainable, and provides him with new conceptions which simplify many of the absurd archaic terms and ideas still common in chemical science.

A Handbook of Employments, Specially Prepared for the Use of Boys and Girls on Entering the Trades, Industries, and Professions. By Mrs. OGILVIE GORDON, D.Sc. (Lond.), Ph.D. (Munich), F.L.S. 8 $\frac{3}{8}$ x 5 $\frac{5}{8}$. Pp. 444. 1s. net. (Aberdeen: Rosemount Press.)

THE co-ordination of elementary and secondary education with the requirements of the staple industries of this country is the theme of this clever and interesting book. The writer is the wife of Dr. John Gordon, a former President of the Aberdeen Pharmaceutical Society, and she is known as one of the most skilled experts in education, as a diligent and assiduous investigator, a fascinating lecturer, and a warm-hearted woman. She clearly shows in the book that much of the effort and money now expended in elementary and secondary education is lost because boys and girls are allowed to drift from school into the first thing in the way of employment that happens to turn up, especially if the wages are good, which, as a rule, is an indication that starting well means ending badly, so far as remuneration is concerned. Mrs. Gordon wants to form educational bureaus, comprising representatives of education and employers, so as to ensure on the one hand that scholars may obtain systematic training in subjects that are useful for special industries, and, on the other hand, employers may have an opportunity of offering suggestions emanating from their business experience. The book consists of two introductory essays, which are followed by tables of occupations, and these are more fully treated in three parts. The first on industrial occupations, with their periods of training; the second on apprenticeship trades and those requiring long periods of training; and the third on professional

callings. From the three pages about pharmaceutical chemists we gather the following particulars: In Glasgow at the last census there were engaged in pharmacy 734 males and 236 females; in Dundee, 117 males and 10 females; in Edinburgh and Leith, 819 males and 139 females; and in Aberdeen, 204 males and 7 females. The monograph deals first with apprentices, describing what should be done, the wages paid, and the nature of the studies during apprenticeship. Then it gives a brief description of the Minor examination and notes on pharmacy as an occupation for women. The following paragraphs are appropriate to this issue:

APPRENTICES.

Before commencing the term of apprenticeship for this business, at the age of sixteen or seventeen, it is better for a boy to have passed the necessary Preliminary examination (the full Leaving examination certificate, University Local, or First Medical Preliminary is suitable). The Pharmaceutical Society will not register him as an apprentice till he has done so.

The apprentice usually commences as messenger in the smaller shops, and assists generally in making up parcels, washing bottles, etc.; then he gradually learns to compound pills, ointments, and prescriptions, and thus becomes familiar with the stock.

The work is healthy and regular, and the career is a secure one, but the chances of promotion are comparatively few. A successful young assistant may sometimes be appointed manager of a branch shop, and, in some cases, capable young men, after serving their apprenticeship with an employer, may be allowed by him to continue as an assistant while taking the necessary classes in the medical courses at a University.

Qualified chemists are employed in laboratories and in manufacturing works, but promotion is slow, and salaries do not rise very high.

GIRL APPRENTICES AND QUALIFIED WOMEN CHEMISTS.

In recent years girls have come forward as apprentices, and have qualified themselves as pharmaceutical chemists. The success attending the few who have become shop assistants proves that the extra neatness and deftness of hand natural to women is specially useful in dispensing work. A strong constitution is necessary, as the work is of an arduous nature. Qualified women dispensers in shops are offered about 30s. to 40s. a week as a starting salary. Posts such as dispensers in hospitals and with private physicians are open to both sexes.

GIRL ASSISTANTS IN SHOPS.

Girls are now being engaged in shops for shorthand and typewriting, and to assist by selling patent and other medicines that have been made up. They are allowed to weigh materials, but cannot make up prescriptions. They start at 4s. weekly, but may rapidly rise, and may get anything up to 1l. per week. Such girl assistants in shops are always recommended to attend ambulance classes, as a general knowledge of "first aid" is of use in their position.

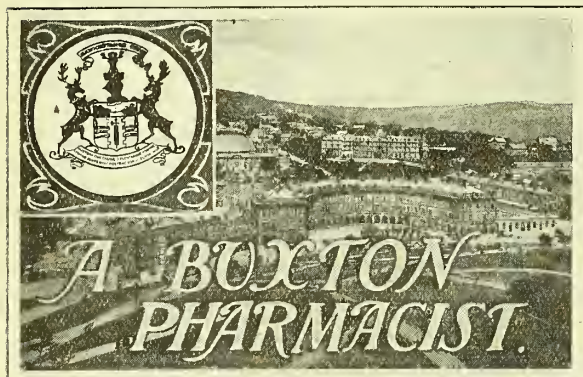
The book is one of the best shillingsworth we know of, and it has created considerable interest in scholastic circles.

Information Wanted.

Inquiries for the names and addresses of manufacturers, or other trade information, not traceable by reference to the advertisement-pages of "The Chemist and Druggist" and the "C. & D. Diary," or not filed in our private register, are inserted here free of charge. Postcard or other replies to any of the subjoined inquiries (addressed to the Editor "The Chemist and Druggist," 42 Cannon Street, London, E.C.) will be esteemed.

- 18/45. Who supplies Davis's Poison Sales Book?
- 19/65. Makers of the Keystone Tablet Machine?
- 15/43. What is antipollen, and where can it be obtained?
- 19/50. Where may carrying and indoor wheel-chairs be hired?
- 18/66. Where can Edison's Electros Porous Plasters be obtained?

THE AUSTRALIAN TARIFF.—The Board of Trade direct attention to the issue of a supplement to the current "Board of Trade Journal," containing the full text of the new Australian Customs tariff as finally passed, and including, for purposes of comparison, a statement of the duties levied under the previous tariff. Copies of the supplement may be obtained for 3d. from Wyman & Sons, Ltd., Fetter Lane, E.C., or through any bookseller.



UNLESS it be "British Pharmacist," there is no more appropriate title for Mr. Robert Wright, F.C.S., President of the British Pharmaceutical Conference, than that placed at the head of this article. With the exception of a session at "the Square," a season at the seaside, and a winter in the South of France, the whole of Mr. Wright's pharmaceutical life has been spent at Buxton as apprentice, assistant, partner, and employer. He has been a student



Yours faithfully
R. Wright

all the time, and that is one reason why this appreciation of the pharmacist of the year falls to be published in our Educational Number. While honouring the man, we feel that this sketch of his career may also encourage and stimulate students of pharmacy by showing what he has accomplished in pharmaceutical research, and under what conditions the work has been done. We may start with the facts that Mr. Wright passed the Minor examination in London in February 1881 and the Major in Edinburgh in October 1882. Incidents in an accomplished man's career are of secondary importance, but these are useful in this instance for chronological consideration of Mr. Wright's

work, of which the first-fruits were given to the British Pharmaceutical Conference in 1881, while Mr. Wright was still with his apprentice-master, Dr. John C. Thresh. He had then, it will be observed, negotiated the Minor and had the Major in view. We begin, therefore, with a

LIST OF MR. WRIGHT'S PUBLISHED PAPERS.

1881.
Commercial specimens of hydrobromic acid (in collaboration with Dr. J. C. Thresh).

1884.
On tincture of quinine (suggesting the use of quinine hydrochloride).

1885.
On ammonio-citrate of iron.
On ferrum tartaratum.

1888.
On acetum ipecacuanhæ, ext. cascariæ sagradæ liq. insp., syr. ferri phosphatis, and ung. hydrargyri oxidi flavi. His work on British Pharmacopœia tinctures was commenced.

1889.
On commercial samples of Scheele's hydrocyanic acid.
On the extraction of aconite and belladonna roots with alcohol and chloroform.
On an impurity in commercial sodium salicylate.

First published papers on pharmacopœial tinctures. [The results of the work thus commenced were communicated to the British Pharmaceutical Conference simultaneously with similar research by Mr. E. H. Farr, and at the suggestion of a mutual friend in pharmacy the two workers, though unknown to each other, arranged by correspondence to collaborate in the research. Their collaborative papers are indicated in this list by "F. & W."]

1891.
On the solvent action of alcohol of different degrees of strength on some of the drugs used for making pharmacopœial tinctures.—F. & W. The series of seven papers in the subject in this year were on tinctures of conium, colchicum, aconite, jaborandi, henbane, belladonna, and stramonium.

1892 and 1893.
Seven more papers following up the work of 1891 were contributed to THE CHEMIST AND DRUGGIST by Messrs. Farr and Wright, and besides a review of the whole subject included notes on tinctures of veratrum viride, gelsemium, lobelia, opium, and cinchona.

1893.
On Easton's syrup.
On collodium belladonnæ.
On alkaloidal tinctures of the British Pharmacopœia.—F. & W.
On the fruit of *Conium maculatum*.—F. & W.

1894.
On the stability of alkaloidal tinctures.—F. & W.
On the methods of determining alkaloids in tinctures.—F. & W.

1895.
On commercial samples of the tinctures of the British Pharmacopœia.—F. & W.

1896.
On liquor auri et arsenii bromatus.
On the pharmacy of hemlock.—F. & W. (continued in 1897).
On the strength of official succi.—F. & W.

1897.
On drying alkaloids in pharmaceutical assaying.—F. & W.
On assaying opium and its preparations.—F. & W.

1898.
On some official extracts.—F. & W.

1899.
On the strength of jaborandi preparations.—F. & W.
On syrupus toltanus.—F. & W.
On assaying ipecacuanha preparations.—F. & W.

1900.
On the determination of strychnine in nux vomica preparations.—F. & W.

1901.
On loss in spirit. ætheris nitrosi.—F. & W.
On liquor gentianæ co. conc.—F. & W.

1902.
On tincture and wine of ipecacuanha.—F. & W.
On alcoholic extracts.
On camphorated oil.
On liquor bromo-chloral co.

We have already indicated that what Mr. Wright is in research he is in business—painstaking. He keeps as well abreast of business-methods as he does with the progress of pharmacy. His shops invite customers to buy, and there is a list of thirty or forty of his own specialities that they can choose from, not to mention the effervescent Buxton salts, which he originated, and which, thanks to his altruism, is common to Buxton pharmacy; but his own is used by persons of note whose names need not be mentioned here. In the details of business, especially the dispensing and analytical departments, we find keen appreciation of the possibilities of a health-resort, and the *métier* of a first-class pharmacist. The dispensing-labels are well conceived (our space admits of but one example), and every package is sent out in azure paper. He is not unmindful that pharmaceutical service well rendered is worth paying for, and has no difficulty in getting his price. It is a liberal dispensing education to spend half an hour at his prescription-books, they exhibit such varied compounds. In short, while Mr. Wright has earned his present high office from British pharmacists, he equally deserves recognition as a fine type of the retail chemist. He is still on the brighter side of fifty, happy in family life with three growing sons around him, and incessant as his pharmaceutical labours have been—they include, it should be said, two four-years' terms as a member of the Pharmaceutical Board of Examiners for England and Wales—he is one of the most active Methodist Church workers in his district. And, a "good fellow," withal.

Summer Outings.

Leicester and Nottingham Adjoin.

THE joint picnic arranged for the members of the Leicester and Nottingham Chemists' Associations and their respective



cricket clubs was held on July 23. The Leicester contingent numbered twenty-nine, including ladies, and the Nottingham party twenty-five. Forces were joined at Loughborough, where the party arrived about 3.15 P.M. A drive was then taken through the beautifully wooded district of the Charnwood Forest, passing Garendon Park, Grace Dieu Priory, to the home of the English Trappist monks, Mount St. Bernard's Abbey. Some time was spent there inspecting the Abbey, and a move was made to High Tor Farm, where, after a welcome and refreshing cup of tea, the drive was continued to the Longcliffe Hotel, Nantant. Here a capital meat tea was in readiness, and this was followed by games and rambles, the party re-assembling at the hotel at 8.30. Mr. S. F. Burford (President of the Leicester Association), Mr. Ellis (Vice-President of the Nottingham Association) and Mr. Middleton (Hon. Treasurer) spoke a few words expressing their gratification at the cordiality existing between the two Associations and at the enjoyment of the day. Thanks were also given to the two Hon. Secretaries for the admirable arrange-

ments made for the outing. Mr. W. Gill, of Nottingham, and Mr. G. E. Marfitt, of Leicester, suitably replying. Then after a short programme of music the party drove back to Loughborough, and thence to Leicester or Nottingham. The photograph given here was taken by Mr. George E. Marfitt, the Hon. Secretary of the Leicester Chemists' Association.

An Outing from Burnley.

THE employes of Messrs. R. Parkinson & Son, wholesale chemists, Curzon Street, Burnley, to the number of seventy, held their annual treat on August 8, the place chosen being Liverpool. On their arrival several of the party took the advantage of obtaining before noon a view over one of the large liners, special permits having been obtained to see three different vessels. New Brighton was visited after dinner, and the party were fortunate in seeing several of the larger steamers start on their voyage to foreign parts. A tour around Liverpool to see the chief places of interest filled in the evening; and a hearty vote of thanks was accorded to Messrs. Parkinson for their generosity.

Kent's at Brighton.

THE employes of Messrs. G. B. Kent & Sons, Ltd., Farringdon Road, London, E.C., met in the Oriental Banqueting-hall of the Royal Pavilion, Brighton, for their annual beanfeast on August 8. The company numbered about 150. At the finish of dinner the Chairman (Mr. A. Barton Kent) read a telegram from Mr. C. F. Barrett wishing all a "Good day, keen appetites, and short speeches," and then Mr. W. Benwell gave the toast of "The Limited Company." He wittily analysed the word Kent—"K" for knowledge, "E" for enterprise and energy, "N" for notoriety, and "T" for tact, which he said were so essential in business and which the firm possessed as typified by its directors. Mr. Ernest N. Kent, in responding, said the firm is as healthy as ever, holding its premier position for "Best British Brushes." He referred to the infusion of "new blood" into the management in the person of Mr. E. Lidderdale, and imparted the information that Mr. A. Barton Kent would soon embark in a business journey round the world. Mr. Lidderdale then gave "The Employés," and said that the continuous record of progress of the company was due to the interest taken in the business by all the employés. Messrs. J. C. Vincent, J. Humphries, and J. Craft replied for the various departments. The Chairman then gave the toast of "The Harold Benevolent Society," to which Mr. Giles replied. The last toast was that of "The Visitors." The bright sunshine materially added to the day's enjoyment.

Trade Notes.

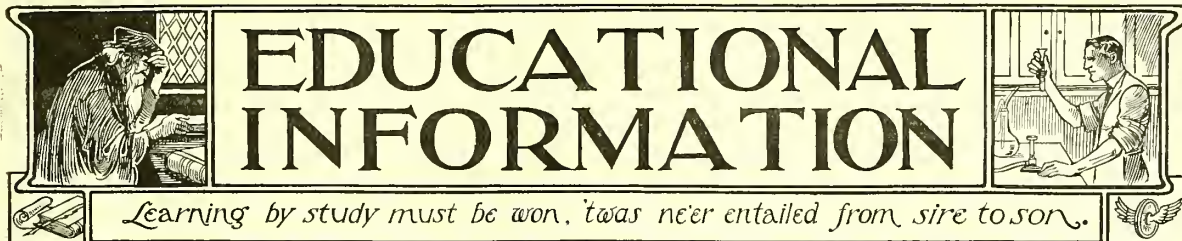
MR. G. L. SCOTT, Ph.C., has just taken over the Birmingham and Midland College of Chemistry, Pharmacy, and Botany, of which particulars are given on p. 275.

ODOL TUMBLERS.—A special offer of Odol tumblers, etched with the name of the retailer, is being made in our advertisement pages by the Odol Chemical Works, Park Street, London, S.E.

MESSRS. BURROUGHS WELLCOME & Co., Snow Hill Buildings, E.C., inform us that their warehouses will be closed on Saturday, August 29, for the purpose of stocktaking. No orders can be executed on that day.

MESSRS. SANGERS, 258 Euston Road, London, N.W., have been carrying out structural alterations and fitting new window-enclosures at the business carried on at 52A Crawford Street by Messrs. Meacher & Higgins.

ZANZIBAR COPAL.—The exports of gum copal from Zanzibar during 1907 amounted to 223,305 lb. (12,6577.), against 256,435 lb. (14,3907.) in 1906. About 70 per cent. of the exports came from German East Africa.



Introductory.

SINCE the first of these annual Educational Numbers was published a marked change has occurred in the professions which are dealt with. Not only have the professional examinations become more searching and the periods of training longer, but there has been a decided tendency towards one portable system of entrance into them. The consequence is that a boy or girl who has been educated for the purpose of entering, say, the medical profession, finds that the same examination in preliminary knowledge also admits to the practice of dentistry, pharmacy, and veterinary surgery, as well as most departments of science and technology. Moreover, education in elementary and secondary schools, as well as in the modern and historic public schools, is now being adapted—at least during the last two or three years of the pupil's schooldays—to fit the various professional requirements. This is a distinct advantage to parents and also to the children, for when the former have decided upon the line of work that the lad or girl is to follow, it is easy during the last two years at school to prepare for a requisite examination, should the calling selected require this. Also, the purpose of the various professional bodies is to encourage this specialising during the schooldays. Its effect is especially observed in the case of the Royal College of Surgeons of England, which recognises the courses of instruction in chemistry and biology given in certain public schools. This recognition of professional subjects studied during schooldays is a sign of the times, and co-ordination of elementary education with professional curricula is the ideal of many advanced educationists. Although we cannot say that the one portable system is established, it exists in effect, and may be considered by those who consult this issue for information respecting pharmacy and its allied professions.

In the pages following we mention under each department the preliminary examinations which are best suited for the particular profession; and here it may be noted that all have subjects in common, but the standards differ. Thus, the Pharmaceutical Society of Great Britain specifies English, Latin, a modern language, arithmetic, algebra, and mathematics as the necessary subjects, and the General Medical Council gives the same for medical and dental students, while the Royal College of Veterinary Surgeons requires candidates for the M.R.C.V.S. to have passed an examination recognised by the General Medical Council. But it does not follow that if a person has qualified for entrance into pharmacy he is also by the same examination eligible for medicine and these others. This is a point which should be carefully noted. There are, of course, examinations whose standard is recognised by all. For example, the Matriculation examination of the London University, if it contains Latin and the other subjects mentioned, will admit not only to the primary stages of all the professions, but to the curricula of study in all the British Universities except Oxford, Cambridge, and Dublin, and to most other Universities in the world. Hence, it is an economy in time, labour, and expense for the school pupil, who has the adequate brains but who does not know which business or profession he or she will take up, to devote the last two years at school to studying for the London Matriculation examination.

Our purpose in the following pages is to describe as concisely as possible the conditions under which professional qualifications can be obtained, to show where to study for these, and to give information regarding the cost of study, the nature of the examinations that have to be passed, and who conduct them.

Pharmacy.

There are four distinct sets of Pharmacy Laws in the United Kingdom: (1) The Pharmaceutical Society of Great Britain is entrusted with the administration of Acts which apply to England, Wales, and Scotland, including Orkney and Shetland; (2) the Pharmaceutical Society of Ireland administers similar Acts which are applicable to the "green isle"; (3) Jersey, Guernsey, and the Channel Islands have Acts of their own and each recognises the British and Irish qualifications as well as the Pharmacie of France; and (4) the Isle of Man has an Act similar in purpose to that of Great Britain, and under it the British and Irish qualifications are recognised. But the qualifications and certificates are not otherwise interchangeable—e.g., a man holding the certificate of the Pharmaceutical Society of Great Britain may not legally practise as a "pharmaceutical chemist" in Ireland; nor may a man with the Irish Society's licence act as a "chemist" in Great Britain. We are yet far from having one pharmaceutical qualification for the British Empire, but reciprocity is aimed at, and requisite powers for initiating it are provided in Bills now before Parliament.

GREAT BRITAIN.

Secretary and Registrar under the Pharmacy Acts, Mr. Richard Bremridge, 16 Bloomsbury Square, London, W.C.

To become a chemist and druggist it is necessary to pass a preliminary examination, be engaged for three years in dispensing medical prescriptions (anywhere), and pass the Minor or qualifying examination. The Pharmaceutical

Society does not now, as it did previous to July 1900, conduct a

PRELIMINARY EXAMINATION,

but requires students to produce certificates showing that they have passed in English, Latin, a modern foreign language, and mathematics (including arithmetic, algebra, and geometry), at not more than two examinations by the same examining body. None of the examinations of the recognised authorities are beyond the range of boys or girls of fifteen or sixteen years of age who have been to a good school. The Medical Preliminary and second-class examination of the College of Preceptors are favourites in England. The Educational Institute's similar examinations in the requisite subjects are popular in Scotland, while in Wales the Junior certificate of the Central Welsh Board is commonly taken. The certificate of the Entrance examination of any British University is sufficient for registration if it comprises the necessary subjects. It is especially desirable that the Preliminary examination be taken before apprenticeship, as, if not, much time will be taken up in preparing for it which otherwise could be devoted to pharmaceutical subjects.

The following is the list of approved certificates:

University of Oxford.—Junior or Senior Local examinations. Responsions.

University of Cambridge.—Junior or Senior Local examinations. Higher Local examinations. Previous examination.

University of London.—Matriculation examination. Higher

School-leaving certificate. Matriculation School-leaving certificate.

University of Durham.—Junior or Senior Local examinations. Certificate of Proficiency examination.

University of Birmingham.—Matriculation examination.

Universities of Manchester, Leeds, Liverpool, and Sheffield.—Joint Matriculation examination.

Universities of Edinburgh, Aberdeen, Glasgow, and St. Andrews.—Preliminary examination in Arts, or Medicine, or Science. Junior and Senior Local examinations.

University of Dublin.—Public Entrance examinations. (For "High Places.")

Royal University of Ireland.—Matriculation examination.

University of Wales.—Matriculation examination.

Scotch Education Department.—The Intermediate Certificate or Passes in the Higher or Lower Grade of the Leaving Certificate examination.

Intermediate Education Board for Ireland.—Senior or Middle Grade Certificate examination.

Central Welsh Board.—Honours, Senior or Junior Certificate examination.

Oxford and Cambridge Schools' Examination Board.—Higher or Lower Certificate examination.

Educational Institute of Scotland.—Medical Preliminary examination.

College of Preceptors.—First or Second Class Certificate examination.

Certificates which contain the specified subjects and are not included in the list may be submitted on their merits. As a rule the certificate of a foreign or colonial University is accepted; but the student is strongly advised to communicate with the authorities here, before leaving his country, to avoid disappointment on arriving in England on finding that the qualification he has gained in his native place is not sufficient.

The following are synopses of the more important examinations:

THE UNIVERSITY LOCAL EXAMINATIONS are so purely scholastic that all information regarding them will probably have been obtained by the parents or guardians before requiring reference to *THE CHEMIST AND DRUGGIST*, but it is advisable for children at school to take one of these examinations yearly, bearing in mind that a University degree may be desired later on, and the Entrance or Matriculation examination of the University should be taken in preference to the higher local examination. The leaving certificates of the various Government authorities are likewise scholastic, but opportunity of obtaining them by boys or girls at school should not be neglected, since they are useful and accepted by the Pharmaceutical Society.

THE SCOTCH UNIVERSITIES' PRELIMINARY EXAMINATION is conducted by a joint board of examiners for the four Scotch Universities, and is held in March and September. The standard for science is higher than that for medicine. Students requiring Carnegie Trust aid must pass the University Preliminary examination and study at a University. Pharmacy students may do this. Candidates may take subjects in which they fail at subsequent examinations (fee 10s. 6d.), and the calendars of the Universities supply full particulars.

THE EDUCATIONAL INSTITUTE OF SCOTLAND conducts a Preliminary medical examination (similar to those of the College of Preceptors) simultaneously in Edinburgh, Glasgow, London, Liverpool, and Dublin during January, April, July, and September. Particulars can be obtained from Mr. S. M. Murray, 34 North Bridge Street, Edinburgh; or from Dr. Hugh Dickie, Henrietta Street, Govan. Examination fee, 1l.; subsequent attempts, 10s.

THE CENTRAL WELSH BOARD EXAMINATION.—Boys and girls in Welsh county schools should pass the Junior examination of this Board in the subjects required by the Pharmaceutical Society. Particulars can be obtained from the Clerk of the Central Welsh Board, Cardiff. Examination fee, 5s.

COLLEGE OF PRECEPTORS.—The first and second class examinations are held in March, June, September, and December, in London and the provinces. Fees, 10s. 6d. in June and September, and 25s. for the Professional or Medical Preliminary examinations in March and September. Local fees in addition. Copies of the regulations should be obtained from Mr. C. R. Hodgeson, B.A., College of Preceptors, Bloomsbury Square, W.C.

SYNOPSIS OF SUBJECTS.

Second Class Examination.—*English* consists of (a) A spelling-test; (b) a short English essay; (c) a paraphrase of a passage of poetry; (d) general grammar and analysis of sentences.

Arithmetic.—Including simple questions on the metric system; but excluding cube-root, problems on rate and time in interest, compound interest, and stocks.

Algebra.—Including simple equations, fractions, and easy quadratic equations of one unknown quantity. Alternative

questions will be set on graphs, for which squared paper will be provided.

Geometry.—Three alternative papers—viz., (a) Euclid, Books I. and II., or the subjects treated therein, with riders; (b) Euclid, Books I. and III., 1-19, or the subjects treated therein, with riders; (c) a paper on theoretical and practical geometry, on the lines recommended by the Mathematical Association; particulars respecting this paper may be obtained from the Secretary.

Modern Language.—(a) Translation from the language; (b) grammar; (c) translation into the language, or free composition in the foreign language. Candidates must satisfy the examiner in at least two sections.

Latin.—Candidates may take either a paper of "unseen" translation or a paper on one of the following books: Cæsar, "Gallic War," Book I. or Book II.; Virgil, "Æneid," Book I., 1-493, or Book X., 1-509. Each paper will contain (a) passages for translation into English, including, in the case of papers on set books, at least one "unseen" passage; (b) grammar and questions arising out of the books for translation into English; (c) simple English sentences for translation into Latin. Candidates are expected to attempt all three of the sections (a), (b), (c), and, in order to pass, they must satisfy the examiner in at least two of the sections.

There is no limit to the number of times a candidate may enter for examination, and he may count towards registration the subjects passed at any two (not more) examinations.

MEDICAL PRELIMINARY.—Candidates must take the above papers in English language, English history, geography, arithmetic, algebra, Latin (including an additional paper), and either Greek of a modern foreign language; and a paper in geometry covering Books I., II., and III. of Euclid. Intending medical, dental, and veterinary students must take a first class paper in geometry. They may take either the Euclid paper or the alternative paper on theoretical and practical geometry. They must at one examination obtain 40 per cent. in each subject. The pass-minimum of marks in the several sections is as follows: English subjects, 200; mathematics, 180; Latin, 90; Greek or a modern foreign language, 60.

LONDON UNIVERSITY MATRICULATION EXAMINATION.—Held in January, June, and September, yearly, for students over sixteen years of age, in London and many provincial centres. For recognition by the Pharmaceutical Society, Latin must be taken as one of the subjects. The student is advised to write for a copy of "Regulations for Matriculation," free on application to the Principal, University of London, South Kensington, London, S.W. Examination fee, 2l.

SYNOPSIS OF SUBJECTS.

Candidates must pass at one and the same examination in five subjects, one being contained in each of the following five divisions:

English.	Physical and general geography.
Elementary mathematics.	History and geography.
Latin, or elementary mechanics, or elementary physics—heat, light and sound, or elementary chemistry, or elementary botany.	Logic.
Two of the following subjects, neither of which has already been taken in the last section. If Latin be not taken, one of the other subjects selected must be another language from the list, either ancient or modern:	Geometrical and mechanical drawing.
Latin.	Mathematics (more advanced).
Greek.	Elementary mechanics.
French.	Elementary chemistry.
German.	Elementary physics—heat light and sound.
Spanish.	Elementary physics—electricity and magnetism.
Portuguese.	Elementary biology—botany.
Italian.	Elementary biology—zoology.
Modern Dutch.	
Arabic.	
Hebrew.	
Sanskrit.	
Chinese.	
Ancient history.	
Modern history.	

The "Preliminary Examination Guide," by Mr. William Dodds, issued by *THE CHEMIST AND DRUGGIST*, 42 Cannon Street, London, E.C., price 2s. 6d., post free 2s. 9d., gives full particulars with instructions as to preparation and notes on the subjects, copies of the questions and answers to the papers, etc., in the principal Preliminary examinations for pharmacy, medicine, dentistry, veterinary surgery, and science. The student is referred to the above work for particulars, which cannot be given in the following general outline. The parents or guardians of girls or boys who are intended to become retail chemists are advised to arrange with the schoolmaster at least one or two years before leaving school for special study in view of the prospective Preliminary examination, when the latter has been decided upon. The College of Preceptors' second-class or junior examination is a favourite with intending pharmacy students of fourteen years of age and upwards. The requisite subjects may be passed at several examinations, but for registration they must pass the subjects required in two (not more) sittings. The General Medical

Council does not accept this certificate, so that a special examination is held for medical, dental, and veterinary students, which is recognised. Pharmacy students should take this preferably since it is recognised by the Institute of Chemistry, the Fellowship of which many students of pharmacy eventually attain to.

REGISTRATION AS APPRENTICES OR STUDENTS.

Chemists' apprentices who have passed an examination should write to Mr. Richard Bromridge, Secretary and Registrar, 17 Bloomsbury Square, London, W.C., for the official publication entitled "Particulars of Examinations, Scholarships, and Prizes," which will be sent post free on application. It contains a list of the examinations that are recognised. The fee for registration as apprentices or students is two guineas. Applicants should bear in mind that they cannot enter for the Minor examination until they are actually registered as students, which usually means an interval of three months between registration and entry for the Minor.

APPRENTICESHIP AND TRAINING.

The conditions under which young persons are apprenticed vary considerably. In England many positions of this kind are indoor situations—a premium of 50*l.* or more being required for the three years, and the apprentice residing with his employer. In Scotland particularly, and also in England and Wales, the apprentice is frequently engaged at a weekly, monthly, or yearly salary, residing with his parents or guardian, as the case may be, and with this arrangement the apprentice is often not indentured. Indentures are common in England and Wales, but rare in Scotland.

Preparation for the qualifying examination may be said to commence on entering the chemist's shop or dispensary, and while in most pharmacies systematic training does not exist, frequent opportunity for acquiring knowledge of the various subjects and gaining experience in many ways can be obtained in the daily routine. The primary stage comprises a liberal amount of dusting, bottle-washing, etc., but soon the youthful apprentice should commence to make up (under supervision) ointments, syrups, and such simple preparations. Much may be learned in making up tooth-powders, face creams, and other specialities sold by his employer, and the apprentice should always ask to be allowed to make up any pharmacopœial preparation required. In Scotland opportunities for dispensing prescriptions are frequent, but in England, owing to many medical practitioners dispensing their own medicines, experience in compounding prescriptions is more difficult to obtain, but facilities for practice are usually readily granted by employers, and an indentured apprentice can legally insist upon such instruction. The amount of experience on the more professional side depends to a large extent upon the employer, while the learning of the art of salesmanship depends chiefly upon the apprentice.

Arrangements for an afternoon or evening course of study in chemistry, botany, and pharmacy can frequently be made without interfering with the daily duties in the shop. Nearly every town of any size has its technical school, and a course of instruction in the pharmaceutical subjects available, supplemented by steady reading at home, will materially lighten the final labour for the Minor examination. The elementary courses in inorganic chemistry and botany for the Board of Education are usually quite sufficient for the first year, adding a course of instruction in organic chemistry, with reading or classes in materia medica the second year. In the third year the attention should be given particularly to pharmacy, but the preliminary practical training in pharmacy should be continued throughout the apprenticeship, the apprentice ascertaining, so far as he is able, the reasons for the various methods and processes. He should not become too dependent upon books, but use his own brains and only turn to the books for fresh instruction or reference. The student should be conversant with Latin from his Preliminary examination, but the knowledge must be retained and prescription-reading practised from the beginning. Books are published on the Latin of the pharmacy and prescriptions, and in the later stages attempts at the prescription problems appearing in these columns will fill some available spare time in a useful and interesting

manner. We cannot impress too much the importance of study and dispensing practice during apprenticeship to make the student expert in handling things and in knowing their uses and properties. All count towards the final examination and are equally necessary for success in business as well.

Students generally take a course of instruction in a school or college before entering for the qualifying examination, and although such a course is not compulsory in Great Britain, all are agreed that it is desirable—the length varying according to the use the student has made of his apprenticeship days.

THE MINOR OR QUALIFYING EXAMINATION.

This examination has to be passed by persons requiring the title of "chemist and druggist." Printed forms of application can be obtained from the Secretary and Registrar at the above address. Candidates cannot enter for this examination until they attain the age of twenty-one years, which fact must be testified by a registrar's certificate. An attested declaration to the effect that the candidate has been practically occupied in the dispensing and translation of medical prescriptions during three years must also be produced. Examinations are held quarterly in London and Edinburgh, and candidates must enter and pay the fee of 10*l.* 10*s.* before the fifteenth day of March, June, September or December, stating whether they wish to be examined in London or Edinburgh.

The examination extends over two days, with an interval of a few days between. The subjects of the first day are dispensing and practical chemistry, three hours being devoted to each subject, with an hour for luncheon between. The Minor experiences which appear from time to time in *THE CHEMIST AND DRUGGIST* give the student a fair idea of the nature of this important part of the examination.

If the candidate satisfies the examiners in this portion he is called upon to appear for an oral examination in botany, chemistry, materia medica, pharmacy, and prescription reading, and at the end of this day's work he is told whether he has passed or failed to satisfy the examiners. The unsuccessful candidate can enter for the next examination three months later on payment of a fee of three guineas.

MINOR EXAMINATION SUBJECTS.

Botany.—Classification, including sub-classes and natural orders, of angiosperms and recognition (fresh or dried) of forty-five specified medicinal plants. Morphology and anatomy of all parts of the plant, including recognition, by the microscope, of plant-structures. Elementary facts about the physiology of plants, including reproduction.

Chemistry and Physics.—An elementary knowledge of physical laws (*e.g.*, conservation of energy, atmospheric pressure, and temperature); the characteristics of chemical action and the principles of chemistry; non-metals and their compounds, with knowledge of the usual impurities in those included in the British Pharmacopœia; metals, their oxides and salts, including their preparation, properties, and adulterations; carbon compounds, especially those used in medicine, and how to prepare and test them. Problems relating to weight and volume under different conditions of temperature and pressure. The practical examination includes the application of physical laws, as by determining specific gravities, recognition of chemicals by tests, qualitative analysis (two metals and two acid radicals), identification of alkaloids, etc., volumetric analysis of the B.P., assaying galenical preparations containing alkaloids, and a practical acquaintance with the methods of preparing the more important B.P. inorganic substances and certain specified organic compounds (*e.g.*, ether and chloroform).

Materia Medica.—Recognition of B.P. and other specified drugs, telling their principal commercial varieties, sources, natural orders, and modes of collection and preparation for the market, some knowledge of their morphology and active constituents, and how the latter may be determined.

Pharmacy.—The examination in this subject deals with all the operations involved in preparing drugs for administration—*e.g.*, evaporation (extracts), distillation, sublimation, desiccation, disintegration of solid substances, solution (infusions, tinctures, etc.), filtration, and expression. The candidate must also know the principles involved in the dispensing of medicines, particularly as to pill-masses and emulsions. He is also required to show a general knowledge of the processes by which the official galenical preparations are made, and to have a knowledge of the proportion of active ingredient or crude material in official preparations of aconite and other potent medicines. He must know what are the scheduled poisons in Part I. and Part II., and the legal conditions necessary to be observed in dispensing, retailing, exporting, and wholesaling them; also the special conditions imposed on the sale of arsenic by the Arsenic Act.

Practical Pharmacy and Dispensing.—The candidate is required to make certain B.P. preparations, and to do everything required in compounding and dispensing physicians' prescriptions.

Prescriptions.—The candidate is required to read and translate into English autograph prescriptions and know the grammatical construction of the Latin; to detect errors, discover unusual doses,

and have a general knowledge of posology. Also to translate English prescriptions into Latin.

The complete syllabus may be obtained post free on application to the Secretary and Registrar.

A Modified examination is held in the same subjects as the Minor for those who were assistants previous to the passing of the Pharmacy Act, 1868, and who registered for the examination on or before December 31, 1868.

THE MAJOR EXAMINATION

entitles those who pass it to call themselves "pharmacists," "pharmaceutists," or "pharmaceutical chemists," but the first title is now proposed in the present Poisons and Pharmacy Bill as the title to distinguish the individual qualified chemist from trading companies who use the title "chemist." The Major examination is chiefly an extension of the Minor, and is only open to those who have passed that examination on payment of an entrance-fee of three guineas. For re-examination the fee is two guineas. The examinations are held now in April and July only in Edinburgh and London. Two days are devoted to written papers on chemistry and physics, botany, and materia medica. The papers in the two latter subjects usually include microscopical examination and identification. The candidate proceeds to a practical examination in chemistry, if his answers to the written portion are satisfactory, and he may be called upon to submit to an oral examination if the examiners think it necessary. The following is a

SYNOPSIS OF THE SUBJECTS.

Botany.—Candidates should have, in addition to what is required in the Minor examination, a thorough knowledge of classification, morphology, and physiology. They are required to make and mount microscopic preparations illustrating vegetable structure, and to apply micro-chemical tests for cellulose and cell products.

Chemistry and Physics.—Candidates may be taken more fully in the Minor subjects, and are expected to have a good knowledge of the constitution of matter, heat, light, magnetism, electricity, chemical theory, and the classification, characteristics, and constitution of the carbon compounds, particularly cyanogen derivatives, hydrocarbons, and paraffin and benzene derivatives. Special attention is paid to B.P. standardising processes. Practical work comprises the analysis of mixtures of three metallic salts; estimation of nitrogen in organic compounds; determination of melting and boiling points; gas-analysis by nitrometer; preparation of specified organic substances; recognition by chemical reactions and determination of the strength and purity of inorganic and organic compounds (including drugs and galenicals) by B.P. tests and assay-processes; the separation of alkaloids and glucosides, and detection of methyl alcohol in galenical preparations.

Materia Medica.—Candidates must know how to estimate the value of important drugs, and to distinguish commercial varieties and separate official active principles. They must also have a general acquaintance with the actual constituents of all important drugs, be able to discover adulterations, examine drugs microscopically, and to discover adulteration in powdered drugs by comparison with authentic material.

Besides the qualifications of the Pharmaceutical Society, degrees are now conferred by certain Universities upon registered chemists and druggists who take the curriculum and pass examinations (p. 278).

The Society of Apothecaries also grants a certificate to dispensers (p. 278).

Pharmaceutical Education and Study.

Although a compulsory curriculum is not yet in force, the student who passes the Minor examination without special training at a suitably equipped institution is somewhat of a rarity. The Metropolis has long been the centre for these special courses, but most of the large provincial towns have institutions of this nature, or classes in the science subjects are obtainable at the technical colleges. Three months' complete courses of instruction are given by the proprietary schools, but all of them make arrangements for study extending over a longer period, as in the ordinary course provided by the Pharmaceutical Society.

To many students the course of preparation for the Minor examination is frequently curtailed to six months or even less on account of the expense, and to such it is a period of arduous work. Wherever possible the lecture-subjects for the following day should be read through overnight, so that the lecturer can be readily followed in his demonstrations. Three hours' real study on five nights a week will be found to be the capacity of the student who desires to remain in normal health. Revision of notes and practical work can be done during any spare time or week-ends. Students often find during reading that they

are not taking the subject-matter in, and a change to another, which should be an entirely different subject, frequently relieves the brain-fag. If this does not suffice, fresh air and exercise are the necessary and rational stimulants.

We append brief notes on the various schools of pharmacy in Great Britain, and refer inquirers to our advertisement pages for directions as to applications. The student should, in the first instance, take full advantage of local facilities for study, more economy with equal efficiency being frequently obtained as the result of inquiries on the spot.

LONDON.

THE SCHOOL OF PHARMACY,

17 Bloomsbury Square, London, W.C.

Staff: BOTANY—Mr. H. J. Jeffrey, A.R.C.Sc. CHEMISTRY AND PHYSICS—Professor A. W. Crossley, D.Sc., Ph.D., F.R.S. (Dean). Assistant Lecturer: Mr. C. H. Warner; Demonstrators: Mr. C. H. Hampshire and Mr. G. F. Morrell. PHARMACEUTISTS—Professor Henry G. Greenish, F.I.C., F.L.S.; Demonstrator: Mr. H. M. Harvey.

The session commences on September 30, 1908. Two courses of study are given—elementary and advanced. The elementary course covers the subjects required for the Minor examination, and extends to the end of June 1909. The advanced course extends from October to the end of March 1909. Students may, however, enter the school at any time and for any subject or part of the course. The fee for the elementary course is 32l. 11s., or 30l. to student-associates of the Society, and for the advanced course 18l. 18s., or 18l. to student-associates or members of the Society. Summer term for students who have completed the advanced course, 4l. 4s. Winter term for those who have completed the elementary course, 6l. 6s. Special short courses are to be arranged for students who can show they have received previous adequate training. Fee, 11l. per term, or 10l. 10s. for student-associates.

MUTER'S SOUTH LONDON SCHOOL OF PHARMACY,

325 Kennington Road, London, S.E.

Founder: Dr. J. Muter, Principals: Messrs. A. H. M. Muter, F.I.C., F.C.S., and Charles A. Hackman, F.I.C. Staff: Mr. Frank Armstrong; Mr. John Thomas, B.Sc. Secretary: Miss G. Duckworth, L.L.A.

The session at this school lasts from September until the middle of July. Fresh courses of lectures for the Minor and Major begin on September 9, October 7, and early in January and April. The fees for the Minor or Major are 8l. 8s. a term; except September to January, 9l. 9s. A Tutorial Class for the October examinations begins on August 19. Fee, 4l. 4s. The examination for the Muter Open Entrance Scholarship, entitling the successful candidate to free tuition, takes place on September 3. Arrangements can always be made for students wishing to take a "part-time" course. Evening classes are also held on Mondays, Wednesdays, and Fridays from 7 to 9 p.m. Fees, 1l. 5s. to 3l.

LONDON COLLEGE OF CHEMISTRY, PHARMACY, AND BOTANY,

323 Clapham Road, London, S.W.

Principals: Mr. Henry Wootton, B.Sc., and Mr. A. Kirkland, Ph.C.

Minor courses commence on September 2 and at the beginning of January and April. Fees, 9l. 19s. 6d. to 10l. 10s., according to length of the term. A six months' Major course begins on October 7 (fee, 13l. 2s. 6d.) and also three months' course in April for the July examination (fee, 6l. 16s. 6d.). Revision course for the October examination commences on August 17. Fee, 5l. 5s. Evening classes are held. Fees, 1l. 1s. to 2l. 10s. Preliminary course begins September 24. Fee for three months, 4l. 4s.

SOUTH OF ENGLAND COLLEGE OF PHARMACY,

186 Clapham Road, London, S.W.

Principal: Mr. H. Lucas, Ph.C., F.C.S.

Minor courses begin on September 7 and early in January and April, extending over three or more months. Fees, 9l. 9s. to 10l. 10s. Tutorial class (for October examination) starts on August 15; fee, 5l. 15s. 6d. Three months' Major courses start in January and April; fee, 8l. 8s. Evening classes are arranged from 6.30 to 9 p.m. for Mondays, Wednesdays, and Thursdays; fees from 1l. 1s. per term, or evening course, from October 5 to July 1909, 9l. 9s.

THE WESTMINSTER COLLEGE,

402 Clapham Road, London, S.W.

Principal: Mr. G. S. V. Wills, Ph.C., F.L.S.

Three ordinary courses commence on October 5 and in January and April, and short courses are held from August 5 and September 1 until the October examination. Ordinary course, fee 8l. 8s.; two courses, 12l. 12s., or until qualified, 15l. 15s.

Short courses, fee 5*l.* 5*s.*, or 3*l.* 3*s.*, according to time of entry. Courses of instruction are given for Major, Apothecaries' Assistant, and Preliminary examinations. Evening classes are held on Tuesday and Thursday evenings from 7 to 9; fee, 1*l.* 1*s.* and 1*l.* 11*s.*

IMPERIAL COLLEGE OF CHEMISTRY,
49 and 51 Imperial Buildings, Ludgate Circus, London, E.C.

Principal: Mr. F. Davis. Courses for the Minor examination begin in January, April, July, and October. Fee, 10*l.* 10*s.* per course; Major, 8*l.* 8*s.* Evening classes, fees 1*l.* 11*s.* 6*d.* to 4*l.* 14*s.* 6*d.* for three months.

BRIXTON SCHOOL OF CHEMISTRY AND PHARMACY,
78 Stockwell Park Road, London, S.W.

Principal: Dr. A. B. Griffiths, F.R.S.E. Classes are held for the Minor, Major, and Apothecaries' Hall examinations. For particulars as to fees apply to the Principal.

WEST HAM TECHNICAL INSTITUTE.

Evening classes commence in September in chemistry, pharmacy and materia medica, and dispensing. Sessional fee, 2*l.* 2*s.*; or without chemistry, 1*l.* 15*s.* Mr. W. A. Knight, Ph.C., teaches the pharmaceutical subjects.

THE PROVINCES.

BARROW-IN-FURNESS.

At the *Technical School* the evening classes in theoretical and practical chemistry are suitable for Minor students. Secretary, Mr. W. Hutchinson, Town Hall.

BATH AND WEST OF ENGLAND COLLEGE OF CHEMISTRY AND PHARMACY.

6 Cleveland Place East, Bath.

Principals: Messrs. David J. Williams, Ph.C., F.C.S., and J. W. Sampson, Ph.C., F.C.S.

On August 17 a revision course begins for the October Minor, fee 4*l.* 4*s.*; and on September 1 a course for the January examination, fee 9*l.* 9*s.* Terms commence in January and April, fee 8*l.* 8*s.* Preparatory postal tuition is offered, fees 1*l.* 1*s.* to 5*l.* 5*s.*, a reduction of 10 per cent. in the fees being given on postal students entering the school. Evening classes are held, fees 1*l.* 1*s.* to 2*l.* 10*s.* 6*d.*; Major courses, three months 6*l.* 16*s.* 6*d.*, and six months 12*l.* 12*s.*

BIRMINGHAM AND MIDLAND COLLEGE OF CHEMISTRY,
PHARMACY, AND BOTANY,
45 Newhall Street.

Principal: Mr. G. L. Scott, Ph.C. A special Minor revision course for advanced students begins on August 13; fee, 5*l.* 5*s.* Other terms begin September, October, January, and April. Major course and evening classes are also held. Particulars from the Principal.

BIRMINGHAM MUNICIPAL TECHNICAL SCHOOL,
Suffolk Street.

Botany is taught here in the evening by Mr. W. B. Grove; elementary, 2*s.* 6*d.* per term, and, advanced, 3*s.* 6*d.* per term for one night per week and 6*s.* for two nights. First and second year's courses in chemistry are given on Wednesday afternoons by Messrs. A. W. T. Hyde and D. F. Twiss, beginning at 2.30 p.m. with a lecture, and from 3.30 to 5.30 is devoted to practical work—all arranged for the Minor; term fee, 5*s.* for the first year and 6*s.* for the second. The C. J. Woodward Memorial Prize of 3*l.* 10*s.* is awarded to the student who does best in the sessional examination of the second year. Secretary, Mr. Geo. Mellor.

BIRMINGHAM UNIVERSITY.

Instruction in the subjects of the Minor and Major examinations is also given at the University, where the Professor of Chemistry is Dr. Percy F. Frankland, F.R.S., a former pharmaceutical examiner.

Mr. F. H. Alcock, Ph.C., F.I.C.,
Temple Chambers, Broad Street, Corner, Birmingham,
gives private tuition in all the subjects of the Pharmaceutical Societies' examinations.

BRADFORD TECHNICAL COLLEGE.

Head of Department, Professor W. M. Gardner, M.Sc., Assistant Professor in Chemistry, B. North, A.R.C.Sc. Lecturers in Chemistry, L. L. Lloyd, Ph.D., and S. F. Snell. Lecturer in Botany, Materia Medica, and Pharmacy, Mr. W. West, F.L.S. The general pharmaceutical course includes chemistry and physics, botany, materia medica and pharmacy, and dispensing, and extends over two years, and is so arranged that apprentices can prepare for the Minor and Major examinations without giving up shop-duties. The classes are held in the afternoons and evenings. Fees: day course 5*l.* 15*s.* 6*d.*, evening course 10*s.*, per session.

BRIGHTON TECHNICAL COLLEGE,
Richmond Terrace.

A pharmaceutical course for Minor students can be obtained at this college. Fee, 2*l.* 2*s.* per term. For particulars apply to the Principal, Dr. C. H. Draper, B.A.

BRISTOL UNIVERSITY COLLEGE.

Staff of Pharmaceutical Department: Physics, Professor A. P. Chattock, M.I.E.E. Lecturers, A. M. Tyndall, B.Sc., J. D. Fry, Pharmaceutics: Lecturer, O. C. M. Davis, Ph.C. Botany: Lecturers, J. H. Priestley, B.Sc., and Miss E. B. Pearce, B.Sc. Chemistry, Professor Francis Francis, D.Sc., Ph.D., F.I.C. Lecturers, J. W. McBain, M.A., and O. C. M. Davis, B.Sc., F.I.C. A complete day-course is provided for the Minor examination at this college, and extends from October till July. Fee, 14*l.* 14*s.*, including registration. For further particulars apply to the Registrar, Mr. James Rafter.

MERCHANT VENTURERS' TECHNICAL COLLEGE, BRISTOL.

Principal: Professor J. Wertheimer. Evening classes suitable for pharmaceutical students are given in botany, chemistry, and physics. Fees for each class, 5*s.* to 7*s.* 6*d.*

DERBY TECHNICAL COLLEGE.

Principal: Mr. F. W. Shurlock, B.A., B.Sc. Classes in pharmacy and materia medica are taken by Mr. S. Taylor, Ph.C., on Wednesdays. Fee, 1*l.* 1*s.* per term. Instruction is also given in chemistry and botany.

ROYAL ALBERT MEMORIAL COLLEGE, EXETER.

Principal, Mr. A. W. Clayden, M.A.; Registrar, Mr. A. Woodbridge. A complete course of instruction for the Minor is given here. Fee, 10*l.* per annum. Day and evening classes are held.

TECHNICAL SCHOOL, STOREY INSTITUTE, LANCASTER.

Principal, Mr. William French, M.A., F.I.C. The classes in botany, chemistry, and physics are suitable for Minor students.

LEEDS COLLEGE OF PHARMACY,
Clarendon Road.

Principal, Mr. F. Pilkington Sargeant, Ph.C., F.C.S. Full time, weekly and evening classes are held, also a class for ladies. Last term commenced on July 6. The winter session begins on October 6, and full-time courses commence next January and April. Fees: full time, 14*l.* 14*s.* for six months, 8*l.* 8*s.* for three months; weekly or evening, 4*l.* 4*s.* for six months; ladies', 8*l.* 8*s.* for six months.

LEEDS CENTRAL TECHNICAL SCHOOL,
Leeds Institute, Cookridge Street.

A pharmaceutical course covering three or four sessions on three evenings a week is provided, or in two sessions if student possess elementary knowledge of chemistry and botany. Fees, 7*s.* 6*d.* for general science course and 3*l.* for special course per session. Mr. J. H. Gough, Ph.C., undertakes the special instruction in materia medica and pharmacy.

LEEDS CENTRAL SCHOOL OF COMMERCE
has an evening course in English and Latin, etc., from September to May for the Preliminary examination. Headmaster, Mr. S. C. Hodgson, B.A.

LEEDS UNIVERSITY.

Courses in chemistry, physics, and botany suitable for pharmacy students are given. Mr. Gough is demonstrator in practical pharmacy.

LIVERPOOL SCHOOL OF PHARMACY,
18 Colquitt Street.

Principal, Mr. H. Humphreys Jones, Ph.C. Day and part-time classes are held. The winter term begins on September 16 and continues till Christmas; fee for Minor students, 10*l.* 10*s.* Courses also begin in January and April; fee 9*l.* 9*s.* The fee for two consecutive courses is 16*l.* 16*s.* The part-time classes are held on Wednesdays from 3 to 10 p.m., beginning September 18; fee for course, 3*l.*, or session, 7*l.* 10*s.* A revision course for the October examination commences on August 19; fee, 4*l.* 4*s.*

LIVERPOOL UNIVERSITY.

Complete courses covering the Minor and Major requirements commence in October. Staff: Chemistry, Professors Campbell Brown and Donnan, Drs. Titherley, De Moulpied, and Rule. Physics, Professor Wilberforce. Mr. G. Owen, Mr. Beatty. Botany, Professor Harvey Gibson, Mr. Lewis. Materia Medica and Pharmacy, Mr. Prosper H. Marsden. Fee for session (ten months), 18*l.* 18*s.* For particulars apply to the Registrar.

MANCHESTER COLLEGE OF PHARMACY,
225A and 227A Oxford Road.

Director, Mr. Charles Turner, Ph.C., F.C.S. The year's work for the Minor is divided into the following courses:

August 24 to January examination (fee 10*l.* 10*s.*), October to the April examination (fee 14*l.* 14*s.*), and January to the July examination (fee 14*l.* 14*s.*). On August 24 a special class for the October examinations begins. Local classes are held on Tuesdays and Wednesdays from 2 to 9 p.m., and evening classes on Mondays and Wednesdays from 7 to 10 p.m. Fees, 15*s.* a month, or 4*l.* 4*s.* six months. There are also short courses for advanced students for the January, April, and July examinations.

MANCHESTER UNIVERSITY.

The professorial staff of the Pharmaceutical Department consists of Dr. E. Rutherford, F.R.S. (physics), Professors H. B. Dixon, F.R.S., and W. H. Perkin, F.R.S. (chemistry), Dr. R. B. Wild, M.Sc. (materia medica and pharmacy), Dr. F. E. Weiss (botany), and Mr. James Grier, Ph.C., M.Sc. (pharmacognosy and pharmaceutical chemistry). The courses for the Minor and Major extend over one winter session (October to April), fee 15*l.* 15*s.* (summer session, 4*l.* 4*s.*). The degree of B.Sc. in pharmacy is granted. For particulars see p. 278.

NORTHERN COLLEGE OF PHARMACY, *Burlington Street, Manchester.*

Principals, Mr. Geo. Clayton, Ph.C., F.C.S., and Mr. F. Lawson, Ph.C., B.Sc. For the Minor four-months' and seven-months' courses commence simultaneously on September 2. Fees, 10*l.* 10*s.* and 15*l.* 15*s.* respectively. The Major courses begin in January and April (fee, 7*l.* 7*s.*), and September (fee, 8*l.* 8*s.*). Afternoon, Once-a-week, and Evening courses commence the first week in September and January; fee, 2*l.* to 4*l.* 4*s.* Other courses, each of three months' duration, commence in October, January, and April. Fees according to the length of tuition taken.

NORTH OF ENGLAND SCHOOL OF CHEMISTRY AND PHARMACY, *55 Northumberland Street, Newcastle-on-Tyne.*

Principal, Mr. J. Stableford Hill, Ph.C. The school reopens in August, with a short course for the October examinations. Fee, 5*l.* 5*s.* Three months' terms commence on first Monday in October, January, and April; fee, 8*l.* 8*s.* Evening (three per week) and Wednesday afternoon classes are held; fee, 3*l.* 3*s.* per term. Major course, 7*l.* 7*s.* per term.

NOTTINGHAM SCHOOL OF PHARMACY, *13 Victoria Street.*

Principal, Mr. S. Royce, Ph.C. A course for the Minor commences on September 1, and other courses at the beginning of each quarter; fee, 8*l.* 8*s.* (three months), and so on according to length. Evening classes are held on Monday and Friday from 8 to 10 p.m., and practical work classes on Thursday from 2 to 5 p.m. Fees, 1*l.* 1*s.* to 2*l.* 7*s.* 6*d.*

NOTTINGHAM UNIVERSITY COLLEGE.

Classes are held in all Minor and Major subjects, including practice in the chemical, botanical, and physical laboratories in evening classes. Fee, 5*s.* to 15*s.* per course. Registrar, Mr. P. H. Stevenson.

PLYMOUTH MUNICIPAL SCIENCE SCHOOLS.

The courses in chemistry, botany, and physics, with practical work in these subjects, are suitable for pharmacy students. Principal, J. B. Brown, B.Sc.

READING UNIVERSITY COLLEGE.

Day and evening courses in chemistry, physics, botany, and materia medica, suitable for pharmaceutical students, can be taken. Fees, day course, 20*l.* per session, and evening classes 2*l.* or 2*l.* 10*s.*, according to classes taken. Particulars from the Registrar.

SHEFFIELD UNIVERSITY.

The classes in botany, materia medica, and chemistry are available for students of pharmacy.

HARTLEY UNIVERSITY COLLEGE, SOUTHAMPTON.

Principal, Spencer W. Richardson, M.A., D.Sc. Courses of chemistry, botany, and physics suitable for the Minor and Major examinations can be arranged for, and the Intermediate courses in botany and chemistry are suitable and at all times available. Several good scholarships are offered.

NORTH STAFFORD SCHOOL OF CHEMISTRY AND PHARMACY, *Kids Grove, Stoke-on-Trent.*

Principal, Mr. E. Griffiths, Ph.C. Courses are given for the Minor examination, the next commencing on September 1.

WOLVERHAMPTON MUNICIPAL SCIENCE AND TECHNICAL SCHOOL.

Day classes in chemistry and physics, and evening classes in chemistry, physics, and botany, with special arrangements for students of pharmacy.

SCOTLAND.

ROBERT GORDON'S COLLEGE SCHOOL OF PHARMACY, ABERDEEN.

Head Teacher, Mr. Gilbert Simpson, Ph.C. A term for the October Minor and Major begins on August 24 (fee, 3*l.* 3*s.*),

and ordinary courses begin on October 5, January 5, and April 5. Fee, 7*l.* 7*s.*, and 6*l.* 6*s.* per term after the first. Evening classes begin on October 5, fees 3*l.* 13*s.* 6*d.*

ROYAL DISPENSARY AND SCHOOL OF PHARMACY OF EDINBURGH, *21 West Richmond Street, Edinburgh.*

Principal, Mr. William Duncan, Ph.C., F.C.S. Terms begin in October, January, and April. Fee, 8*l.* 8*s.* per term. Evening classes (Mondays, Tuesdays, and Thursdays, at 8.30) begin in September. Fee, 3*l.* 3*s.* per term of three months.

CENTRAL SCHOOL OF PHARMACY, *26 Clyde Street, Edinburgh.*

Principal, Mr. W. Beverley Cowie, Ph.C., F.C.S. Short courses of instruction for the Minor and Major examinations begin on August 18, and the Winter Session opens on October 5, other terms commencing in January and April. Day and evening classes are held. Fees, day, 8*l.* 8*s.*; evening, 3*l.* 3*s.* per term.

HERIOT-WATT COLLEGE, *Chambers Street, Edinburgh.*

Principal, Dr. A. P. Lawrie. The scientific and technical side comprises classes in the subjects of the pharmaceutical examinations. Mr. William Duncan, F.C.S., lectures on pharmaceuticals on Wednesday evenings at 8.30, beginning in October, for 5*s.* per session. Evening courses in chemistry are given for the Minor and Major examinations (fee, 2*l.* 2*s.*), also in botany and physics (fee, 5*s.*).

GLASGOW SCHOOL OF PHARMACY, *180 West Regent Street, Glasgow.*

Principal, Mr. John Lothian, Ph.C. A short course for the October examinations begins on August 17 (fee, 4*l.* 4*s.*). Full three months' courses and six months' courses for the Minor and Major begin on October 5, fee 8*l.* 8*s.* Evening classes begin on October 5, fees 1*l.* 1*s.* to 3*l.* 3*s.* per quarter. Afternoon classes are held once a week, fee 2*l.* 2*s.* Evening classes for the Preliminary examination (two evenings weekly), conducted by Mr. Malcolm Mackinnon, M.A., commence September 17. Fee, 1*l.* 1*s.* per quarter.

WEST OF SCOTLAND COLLEGE OF PHARMACY, *4 Newton Street, Charing Cross, Glasgow.*

Staff: Mr. Thomas S. Barrie, Ph.C., F.C.S., Mr. W. Graham, and Mr. W. C. Macmaster, M.A. Day and evening tutorial courses for the October examinations begin on August 17. Fees: day course, 4*l.* 4*s.*; evening classes (four evenings a week), 1*l.* 11*s.* 6*d.*; winter session evening classes, 2*l.* 2*s.* to 3*l.* 3*s.* per term. Classes for the various Preliminary examinations are conducted, also correspondence classes for the same.

IRELAND.

The Pharmaceutical Society of Ireland was constituted and incorporated by the Pharmacy Act (Ireland), 1875, and to this Society is entrusted the duty of securing properly qualified persons to dispense medicines and sell poisons in Ireland. Pharmaceutical chemists are examined and registered under the provisions of the Pharmacy Act (Ireland), 1875, and they have the legal right to compound and dispense medical prescriptions as well as sell poisons. The Amendment Act, 1890, created a grade of registered druggists who act as poison-sellers, but druggists may not compound and dispense medical prescriptions. This class fulfil a useful purpose in enabling industrial and agricultural poisons to be procured without difficulty, even in remote districts of Ireland. The important difference in the functions of the pharmaceutical chemists of Ireland and Great Britain will have been noted; but another interesting point is a grade of pharmaceutical assistants who are examined and certified as qualified to take charge of a pharmacy in the temporary absence of the principal.

The Pharmaceutical Society of Ireland conducts its own Preliminary examination, which the candidate is required to pass before beginning his four years' apprenticeship with a pharmaceutical chemist (unless such service commenced before January 1, 1907). Certain examinations are accepted in lieu of the Society's Preliminary, the regulations in this respect (see below) having been amplified this year. The practice of accepting only the examinations which are required as a Preliminary by the General Medical Council was formerly followed; but now the junior, middle, and senior grades of the Intermediate Education Board are all accepted, provided the necessary subjects are included.

PRELIMINARY EXAMINATION

is held at the Pharmaceutical Society's House, 67 Lower Mount Street, Dublin, on the first Thursdays of January, April, July, and October. The following are the

SUBJECTS OF EXAMINATION.

Latin.—To translate into English, and parse sentences from a Latin author: Caesar's "Commentaries" ("De Bello Gallico"), First Book; or Virgil's "Æneid," First Book. To translate an easy English sentence into Latin.

English.—English grammar, including orthography and parsing. To write on a subject selected by the examiner; and to write from dictation.

Arithmetic.—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures and the metric system.

Algebra.—As far as simple equations, inclusive.

Geometry.—Including the first Book of Euclid.

Elementary Theoretical Chemistry: Chemical Action.—Illustrations and examples. Simple and compound substances. Atoms and molecules. Chemical symbols and nomenclature; formulae and equations. General nature of acids, bases, and salts. *Combustion*.—Structure and properties of flame. *Water*.—Proofs of composition. Methods of purification. *The Air*.—Its constitution. Reasons for considering it a mixture and not a compound. The chief physical and chemical characters, with methods of preparation of the following elements and compounds: Hydrogen, oxygen (and ozone), nitrogen, carbon, chlorine, sulphur, nitrous oxide, nitric oxide, nitro acid, ammonia, carbon dioxide, carbon monoxide, marsh gas, olefiant gas, hydrochloric acid, sulphur dioxide, sulphurous acid, sulphuric acid, sulphuretted hydrogen.

The candidate must also pass in one of the following optional subjects:

Elementary Physics and Mechanics.—Sound, light, and heat, as given in Ganot's elementary course of natural philosophy; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

The Rudiments of Botany.—Lessons in elementary botany: Edmond's—first fourteen chapters.

French, German, or any modern language.

One hour is allowed for each paper. In each of the following subjects a candidate must obtain 50 per cent.—viz., English, arithmetic, the British and metrical systems of weights and measures; 30 per cent. in each subdivision of Latin and in the optional subject; and 40 per cent. on the entire course to enable him to pass. No candidate will be allowed to pass should he not obtain 20 per cent. in each of the other compulsory subjects.

Applications for entry to the examination must be lodged with Mr. A. T. Ferrall, Registrar to the Society, at the above address, fourteen days before the date on which the examination is to be held. Prior to application candidates have to deposit the fee of 2*l.* 2*s.* in the Bank of Ireland, get a receipt, and send it with their application to Mr. Ferrall. A certain form has to be gone through, and it is advisable that candidates while they are preparing for the examination should obtain from Mr. Ferrall a copy of the Examination Regulations, and adhere to the instructions given therein.

The following examinations are accepted in lieu of the Society's Preliminary:

The Matriculation or Preliminary examination of the University of Dublin, Public Entrance examination (large certificate).

The Royal University of Ireland Matriculation examination.

The Royal Colleges of Physicians and Surgeons, Ireland, Preliminary examination.

The Intermediate Education Board for Ireland Junior, Middle, and Senior Grade examinations in the following subjects: (a) English (grammar, paraphrasing, composition, questions on English history and geography). (b) Latin (grammar, translation into English from unprescribed Latin books; translation into Latin of a continuous English passage, and of short idiomatic English sentences). (c) Mathematics (arithmetic, algebra, including easy quadratic equations; geometry, including the subject-matter of Euclid, Books I., II., III., and simple deductions). (d) One of the following subjects: (a) Greek (grammar, translation into English from unprescribed Greek books, translation into Greek of short idiomatic English sentences); or (b) a modern language (grammar, translation into English from unprescribed books, translation of a continuous English passage, and of short idiomatic English sentences).

And such other examinations as shall be deemed by the Pharmaceutical Council as equivalent thereto, all the subjects having been passed at one time. All such examinations to be passed prior to the statutory service at pharmacy, unless such service has been commenced before January 1, 1907, the usual fee of two guineas to be paid.

THE PHARMACEUTICAL LICENCE EXAMINATION

is also conducted in the Society's House, Dublin. The conditions of entry are as follows:

1. Candidates must prove that they have reached the age of twenty-one.
2. They must have passed the Preliminary examination at least four years previously.
3. They must have been engaged four years as an apprentice

or assistant with a pharmaceutical chemist, chemist and druggist of Great Britain, or apothecary, or firm of any of the foregoing keeping open shop, or have served a four-years' apprenticeship to a chemist and druggist or registered druggist, and (after passing the Preliminary examination) two years with a pharmaceutical chemist, etc.

4. Candidates must also attend a course of practical chemistry of not less than three months, and actual work at the bench of 100 hours, at one of the following institutions, and at a course of botany and of materia medica at one of those marked with an asterisk or otherwise indicated:

*School of the Pharmaceutical Society of Ireland.

*School of the Pharmaceutical Society of Great Britain.

Cecilia Street School of Medicine, Dublin.

City of Dublin Technical Schools.

Government School of Science, South Kensington.

*Queen's Colleges, Belfast, Cork, and Galway.

Royal College of Science for Ireland, Dublin.

Royal College of Surgeons in Ireland, Dublin.

Trinity College, Dublin.

School of Physic, Trinity College, Dublin (botany and materia medica only).

Anderson's College Medical School, Glasgow.

*Royal Academical Institution, Belfast.

*Municipal Technical Institute, Belfast.

Crawford Municipal Technical Institute, Cork (botany and chemistry only).

As regards No. 3 provision is made for the required service with more than one employer. The examination is held on the second Wednesdays of January, April, July, and October. Candidates must give notice to the Council fourteen clear days before the date of the examination, and lodge with the Registrar a receipt of having paid the fee of 5*l.* 5*s.* into the Bank of Ireland to the credit of the Society.

A birth certificate, the Preliminary examination certificate, a declaration as to service, and class certificates have to be sent with the application, as to all of which the candidate should ask instructions from the Registrar well beforehand.

SUBJECTS OF EXAMINATION.

Botany.—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

Materia Medica.—To recognise specimens of the drugs of the Pharmacopœia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

General and Pharmaceutical Chemistry.—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in these subjects. (The Council recommends Corbyn and Stewart's "Physics and Chemistry.")

Practical Pharmacy.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly. To explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them; and to have an intimate knowledge of the Sale of Poisons (Ireland) Act, 35 and 34 Vict. chap. 26, 1870.

The examination is written, oral, and practical. The minimum pass percentage in pharmacy is 50, in botany, materia medica, and chemistry 40 each, and the candidate in order to pass must make a total of 55 per cent. A candidate who obtains 70 per cent. of the total marks and not less than 50 per cent. is awarded a "pass with honours." The questions set are printed in the Society's "Calendar" (price 1*s.* 6*d.*, by post 1*s.* 9*d.*, from the Registrar). The fee for re-examination in the Preliminary is 10*s.* 6*d.*, and for the Licence 2*l.* 2*s.* The Registrar will supply any additional information required.

ASSISTANTS TO PHARMACEUTICAL CHEMISTS.

The examination for this certificate can be taken by persons who have passed the Preliminary examination and have been engaged at practical pharmacy for at least four years. Candidates need not be twenty-one years of age. As the examination is held quarterly after the Licence examination, candidates rejected at the latter may present themselves at the Pharmaceutical Assistant examination on the following Monday on giving notice to the Registrar and paying the fee of one guinea. The following are the

SUBJECTS OF EXAMINATION.

Prescriptions.—Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

Practical Dispensing.—To weigh, measure, and compound medicines, write the directions in suitable language, finish, and properly direct each package.

Materia Medica and Quality of Specimens.—To recognise the Pharmacopœia chemicals in frequent demand, and specimens of roots, barks, leaves, fruits, resins, and gums in ordinary use; also to estimate the quality of each specimen submitted, and its freedom from adulteration.

Pharmacy.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures, and powders, and give the proportions of the more active ingredients. The candidates will also be examined in the Sale of Poisons (Ireland) Act.

REGISTERED DRUGGISTS.

This examination is open to any person who has served four years as an apprentice or assistant to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary keeping open shop. The subjects of the examination are:

- English orthography and composition.
- Arithmetic and the weights and measures of the British Pharmacopœia.
- The appearance and properties of the various drugs and chemicals in general use.
- The Sale of Poisons (Ireland) Act.

The examination is held in Dublin and Belfast (if twelve candidates enter for the latter) on the second Tuesdays of January, April, July, and October. Application has to be made to the Registrar in Dublin at least fourteen days before the date of the examination, with the necessary certificates of service and a receipt for the examination-fee (2*l.* 2*s.*) paid to the Bank of Ireland to the credit of the Society. An additional registration-fee of 2*l.* 2*s.* has to be paid on passing the examination. On re-examination the examiners' fees have to be paid.

In the case of failure in any of the foregoing examinations, an interval of six months must elapse before a candidate re-enters.

PHARMACEUTICAL EDUCATION IN IRELAND.

The particulars of the official school are abstracted from the prospectus of the Pharmaceutical Society's School; but the names of other educational establishments where instruction in certain subjects can be obtained are given in the previous column:

Pharmaceutical Schools of Chemistry, Botany, and Materia Medica, 67 Lower Mount Street, Dublin. Practical Chemistry School: Director, Professor P. Kelly, M.P.S.I.; Professors of the Botany and Materia Medica School, Dr. J. S. Ashe, M.P.S.I., and Mr. A. H. Laird, B.A. The fees for the courses in accordance with the regulations of the Society are: Practical chemistry (six months), 6*l.* 6*s.*; practice course (three months), past students, 2*l.* 2*s.*; students of other schools, 3*l.* 3*s.*; botany and materia medica (three months), 2*l.* 2*s.* The winter course begins in October. The practical chemistry class is held on Mondays, Wednesdays, and Fridays. The botany and materia medica classes are held on Tuesday and Thursday evenings, with occasional Saturday demonstrations. Printed particulars can be had by applying to the Registrar, 67 Lower Mount Street, Dublin.

Belfast Municipal Technical Institute.—There is a pharmaceutical department in connection with this Institute, at which lectures in chemistry, practical chemistry, botany, materia medica, and pharmacy can generally be taken. For particulars apply to the Principal.

Apothecaries' Assistants.

The Society of Apothecaries, London, and the Apothecaries' Hall in Ireland (Dublin), give certificates of competency to act as dispensers to apothecaries. The certificates are much sought after by women who desire to obtain evidence of their skill in dispensing, but the holders are not entitled to registration under the Pharmacy Act by reason of having passed the examinations under which these certificates are granted. Considerable activity has of late years been shown by the apothecaries' assistants, an Association of Certified Dispensers having been formed, with about 200 adherents, to look after the interests of the members.

The *Society of Apothecaries*, Blackfriars, London, E.C., holds an examination for those who desire its certificate to act as an assistant to an apothecary in England and Wales. The examination is held on the fourth Wednesday and following days of January, April, July, and October. Candidates must be at least eighteen years of age and should observe the following conditions of entry:

- (1) Obtain from the Secretary (Mr. F. Haydon, L.R.C.P.), at the above address, a form of entry; (2) fill this up and return, with 5*l.* 5*s.*, fourteen days at least before the date of the examination; (3) send with it a certificate of age and one

(signed by a registered medical practitioner or an assistant of the Society holding a public appointment, or a legally qualified chemist) of having had instruction in practical pharmacy for six months.

The examination is oral and practical, and the candidate is credited with those subjects in which he passes. In the event of failing he is re-examined only in those parts of the examination in which he fails. The subjects are:

(1) A practical examination in the *Compounding and Dispensing of Medicines*.

(2) An oral examination in *Chemistry*, comprising general principles; preparation and properties of the elements; hydrochloric, nitric, and sulphuric acids, and their action upon the common metals, metallic oxides and carbonates; chemical composition of water and air; preparation, properties, and tests of salts of ammonium, sodium, potassium, calcium, magnesium, alum, zinc, iron, lead, silver, copper, bismuth, antimony, and mercury, as well as such things as chloroform, glycerin, quinine, and hydrocyanic, acetic, tartaric, and citric acids and their common salts.

Materia Medica and Pharmacy.—Candidates are required to show a knowledge of the chemical and physical characters, the composition, and doses of the articles and preparations included in the British Pharmacopœia, 1898, and to recognise many of them. The examination includes the translation of prescriptions.

Instruction for this examination may be obtained at any of the schools of pharmacy. Some women dispensers in public institutions make a practice of preparing pupils for this examination.

The *Apothecaries' Hall in Ireland*, 40 Mary Street, Dublin, holds a similar examination on the first Friday of each month except August. Candidates must be sixteen years of age, and must prove that they have spent two years at practical pharmacy under a duly registered apothecary or pharmaceutical chemist, and show that they are of good moral conduct. The subjects of the examination are:

Pharmacy, Practical and Theoretical, including the correct translation of medical prescriptions.

Materia Medica, including the doses of the Pharmacopœia, and the recognition of the drugs.

Antidotes used in cases of poisoning.

Pharmaceutical Chemistry, including the fundamental laws and recognition of poisonous chemicals. Knowledge of the British Pharmacopœia is requisite.

Metric System of Weights and Measures.

The fee of 2*l.* 2*s.* is to be paid to the Secretary at the above address, with notice of intention to appear, at least seven days before the examination is held.

Pharmacy Degrees.

Degrees in the pharmaceutical department of science can be obtained in England at the Manchester University, and in Scotland at the University of Glasgow. The following are a few brief statements concerning the curricula at Manchester and Glasgow; for detailed particulars consult the prospectuses of the Universities.

B.Sc.(PHARM.) OF MANCHESTER.—Candidates must pass the University Matriculation examination and attend the Pharmaceutical Department at Owens College for three years, the course of instruction preparing them for the Minor examination (to be taken at the end of the first year), Major (at the end of the second year), and degree (at the end of the third year). For the ordinary degree of B.Sc. the candidate must present certificates of having attended the following courses of instruction:

(1) *First Year.*—Chemistry, physics, botany, and pharmaceutical laboratory.

(2) *Second Year.*—Chemistry (final standard), botany (final standard), and materia medica (advanced).

(3) *Third Year.*—Chemistry and any two of the following: Physics, electro-chemistry, pharmacology, bacteriology, toxicology, analysis of food and drugs.

Candidates must present themselves for the Intermediate examination at the end of their first year of study after passing the Matriculation examination. The subjects are: (i.) Physics with practical work; (ii.) chemistry with practical work; (iii.) botany with practical work; (iv.) a practical examination in the pharmaceutical laboratory.

The subjects of the Final examination are: (i.) Chemistry; (ii.) Two of the following: Botany, materia medica, physics, history of chemistry, electro-chemistry, pharmacology, bacteriology, toxicology, analysis of food and drugs.

B.Sc.(PHARM.) GLASGOW.—For the degree of Bachelor of Science in pharmacy of the Glasgow University candidates must first pass the Preliminary students' examination for science. They must attend at least seven courses of instruction in the prescribed subjects in the course of not less than three academical years, four of the seven courses being taken at the Glasgow University and the rest at approved institutions. The "Regulations" for the degree (published by Messrs. J. MacLehose & Sons, 61 St. Vincent Street,

Glasgow) contains a detailed statement of the order of study recommended. Two examinations must be passed, viz.:

First Science Examination in mathematics or biology (i.e., zoology and botany), natural philosophy, and chemistry. Candidates may present themselves in any one or more of these subjects at any examination.

Final Science Examination in chemistry, botany, materia medica, and pharmacy.

Before entering for the Final, candidates must, *inter alia*, produce evidence of being chemists and druggists registered under the Pharmacy Acts, 1852 and 1863, or of being graduates in medicine.

It will be observed that the degree is not open to Irish pharmaceutical chemists.

The granting of a degree in pharmacy in the faculty of medicine by the University of Edinburgh is in abeyance. The General Medical Council and the University of Glasgow object to the institution of the degree in the faculty of medicine (*C. & D.*, 1908, i. 369).

GREATER BRITAIN.

The Minor certificate of the Pharmaceutical Society of Great Britain and the Irish Licence are recognised for registration in all parts of the British Empire except Canada. The following notes give the outline of the requirements of the various Pharmacy Boards; the address of the Secretaries and Registrars will be found in *THE CHEMISTS' AND DRUGGISTS' DIARY*.

AUSTRALASIA.

New South Wales.—Chemists must be registered by the Pharmacy Board. A person over twenty-one years of age may be registered on producing a certificate of qualification as chemist recognised by the Board, or on passing the Board's examination in pharmacy (fee 3*l.* 3*s.*) after (1) passing a Preliminary examination (fee 2*l.* 2*s.*) in arithmetic, English, and Latin; (2) taking a course of lectures and passing the examinations in chemistry, practical chemistry, botany, and materia medica of a recognised institution; (3) three years' apprenticeship with a registered pharmacist.

The certificates of any other of the Australian States are recognised.

New Zealand.—Persons holding a certificate of qualification recognised by the New Zealand Pharmacy Board may practise as a chemist on payment of a registration-fee of 1*l.* 10*s.* Other persons must pass the Board's or other approved Preliminary examination and serve under articles of apprenticeship to a registered chemist for three years, and take an examination in materia medica, botany, chemistry, practical chemistry, pharmacy, and practical pharmacy.

Queensland.—Certificates of the Pharmaceutical Societies of Great Britain, Tasmania, and Western Australia, the New South Wales, and Cape Pharmacy Boards are recognised for registration under certain conditions. Other persons must be apprenticed or serve as an assistant for three years, while apprentices must pass a Preliminary examination in Latin, English, arithmetic, algebra, and Euclid. The examinations for registration as a pharmaceutical chemist consist of (1) an *Intermediate examination* in chemistry, botany, materia medica, and pharmacy; (2) a *Final Qualifying examination* in botany, chemistry (including physics), chemistry (practical examination), materia medica, pharmacy, practical pharmacy, and dispensing, and prescriptions.

South Australia.—Conditions similar to New South Wales, except no curriculum required, but an Intermediate examination, and a Final examination in dispensing, materia medica, and pharmacy (fee 1*l.* 1*s.*), and the apprenticeship period is four years. Registration fee, 10*s.* 6*d.* Preliminary examination fee, 1*l.* 1*s.*

Tasmania.—No person, except a medical practitioner, and under certain restrictions where there is no licensed person within two miles, may sell drugs without a licence from the Court of Medical Examiners.

Victoria.—The conditions are practically the same as in New South Wales, with the addition of geometry and algebra for the Preliminary examination and a four years' apprenticeship under a chemist or in a dispensary. The provisions do not apply to medical practitioners or wholesale dealers. Registration fee, 2*l.* 2*s.*; examination fee, 3*l.* 3*s.*, with a registration fee of 1*l.* 1*s.*

Western Australia.—All persons, except qualified medical practitioners, must be registered by the Pharmaceutical Society. Certificate of registration, 3*l.* 3*s.* The certificates of the Pharmaceutical Societies of Great Britain and Ireland or the diploma for the Major examination of any Australian Pharmaceutical Society where there is reciprocity are accepted for registration. Other candidates must have passed

a Preliminary examination of the Council (fee 2*l.* 2*s.*) or other approved equivalent examination and served five years as an apprentice under a chemist in Australia and pass two Qualifying examinations in practically the same subjects as those in Queensland.

CANADA.

British Columbia.—Any person desiring to practise as a chemist must obtain a certificate from the B.C. Pharmaceutical Association. The Board of Examiners grant, after examination, certificates or diplomas to persons they deem proper as qualified to be licentiates of pharmacy, certified clerks, or certified apprentices. Diplomas of the Pharmaceutical Society of Great Britain and pharmaceutical associations who allow reciprocal registration of the B.C.P. Association's certificate may be registered without examination.

Manitoba.—No person may be a chemist unless he is a member of the Pharmaceutical Association of Manitoba. The candidate must pass a Preliminary examination and two examinations in the subjects of his profession, and before passing the second one must have served four years in a drug-store and have attended lectures in chemistry, etc. Medical practitioners are exempted from the above regulations, and other diplomas or certificates allowing the holder to practise as a chemist in any part of his Majesty's dominions may be accepted on condition that the candidate for membership is "of good standing and in actual practice" up to the time of coming to Manitoba.

New Brunswick.—All chemists must be registered by the N.B. Pharmaceutical Society. Candidates must pass an examination (fee \$5), previously serving three years in a drug-store, and being occupied during one year in dispensing. Fee for diploma, \$5. Annual registration fee, \$4 or under. The council may accept the diploma of any other competent examining body as sufficient evidence for qualification. Registered medical practitioners need not pass an examination.

The North-West Territories.—Chemists must be registered by the N.W.T. Pharmaceutical Association. Any applicant for registration must (1) possess a diploma to practise as a chemist in some part of his Majesty's dominions given by some pharmaceutical society or college of pharmacy; (2) serve four years in a drug-store and pass an examination in chemistry, pharmacy, botany, materia medica, and prescription-reading.

Nova Scotia.—Drug and medicine vendors must be registered by the Council of the N.S. Pharmaceutical Society. Candidates for the yearly examination must have served four years as assistant to a registered druggist and have been employed during two at least of which in dispensing prescriptions. Diploma fee, \$5. The Council may accept, at their discretion, the diploma of any other examining body. Annual registration fee limited to \$4.

Ontario.—Persons desiring to practise as chemists must be registered and obtain a certificate of competency from the Council of the Ontario College of Pharmacy. Candidates for a certificate must serve an apprenticeship of four years (after obtaining approved Preliminary certificate) with a pharmaceutical chemist, and have attended two courses of lectures at the Ontario College of Pharmacy. Diplomas of the Pharmaceutical Society of Great Britain or certificates from any pharmaceutical society in Canada or elsewhere may be registered without examination if approved of by the College Council.

Prince Edward Island.—All chemists must be registered by the Pharmaceutical Association. Candidates must pass the Association's examination and also have served four years as an assistant in a drug-store, for at least two of which he has been occupied in the dispensing of prescriptions. Fee, \$5. Diploma, \$5. The Council may at their discretion accept the diploma of any other competent examining body. Medical practitioners may practise as chemists without examination.

Quebec.—There are three classes: (1) Certified apprentices, who are required to pass an approved Preliminary examination, annual fee \$2 or under. (2) Certified clerks, who have been registered as certified apprentices for three years, have served three years under a registered licentiate of pharmacy, and passed an examination in the translation and dispensing of prescriptions, and in pharmacy, chemistry, toxicology, posology, and materia medica. Annual fee, \$5 or under. (3) Licentiates of pharmacy who only, other than authorised physicians, may act as chemists and druggists in this Colony, must in addition to being certified clerks, have served four years as above, and followed two courses in chemistry and physics and one in botany. Annual fee, \$10 or under.

SOUTH AFRICA.

Cape Colony.—Annual licences (fee 5*l.*) to practise as chemist or druggist are granted to persons who have passed

the Colonial Pharmacy Board's examinations or produce certificates of the examining bodies for qualification as a chemist in Great Britain, Ireland, Victoria, Tasmania, and New South Wales. The Board holds examinations in May and November; fee, 3*l.* 3*s.* Candidates must have an approved Preliminary certificate in English, Latin, and arithmetic, and pass in the subjects of prescriptions, practical dispensing, pharmacy, materia medica, botany, and chemistry, and have served four years apprenticeship under a duly licensed chemist. Foreign or colonial diplomas are only accepted where mutual reciprocity has been arranged.

Orange River Colony.—Chemists must be registered by the Medical Pharmacy Council. Chemists holding certificates in the British Empire are entitled to registration if the diploma is recognised by the Council. The qualifications of the Pharmaceutical Society of Great Britain and the certificate of pharmaceutical chemist in Ireland are recognised. Other persons must (1) show three years' apprenticeship to a chemist in the Colony or elsewhere, or prove occupation in the dispensing of medicines under a chemist or medical man in the Orange River Colony for the same term; (2) have passed an approved Preliminary examination, including English, Latin, and arithmetic; (3) pass the examination for registration in the subjects of botany, chemistry, and physics, practical chemistry, materia medica, pharmacy, practical pharmacy and dispensing, and prescriptions. Examinations held in

February and August. Fee, 5*l.* 5*s.* Registration certificate, 5*l.* Annual licence, 10*l.*

Natal.—Persons practising as chemists must obtain a licence from the Pharmacy Board. Fee not exceeding 5*l.* The examination requirements are practically the same as in Cape Colony. Examination fee, 3*l.* 3*s.* Certificate, 3*l.* 3*s.* more, and registration 1*l.* 1*s.* The certificates of the Pharmaceutical Societies of Great Britain and Ireland are at present the only ones recognised in place of examination.

Rhodesia (Southern).—The fee for admission to practise in Southern Rhodesia as a chemist and druggist is 5*l.*

Transvaal.—Persons desiring to practise as chemists must obtain a registration certificate from the Colonial Secretary at Pretoria. The Pharmacy Board accept the Minor and Major certificates of the Pharmaceutical Society of Great Britain and the Pharmaceutical Licence of Ireland in lieu of their examination, and may accept other diplomas on reciprocity basis. The candidate for examination must show four years' service with a registered chemist in the Transvaal or other parts of his Majesty's dominions, show satisfactory education, and pay 10*l.* The examination subjects include a practical knowledge of the morphology, anatomy, physiology, and classification of plants, physics (elementary), chemistry (elementary), practical physics and chemistry, materia medica, pharmacy, practical pharmacy and dispensing, prescriptions, and sale of poisons.

Medical.

The General Council of Medical Education and Registration of the United Kingdom is, as its name implies, entrusted by the Medical Act of 1858 and subsequent Acts to regulate the qualifications of practitioners in medicine and surgery. The Council consists of members chosen by the institutions in the United Kingdom which grant degrees or diplomas in medicine and surgery, besides persons nominated by the Privy Council or elected by registered medical practitioners. The Council is not an educating or examining body, but arranges the subjects of instruction and the periods of study required of students of medicine, inspects the various examinations, and registers those who pass all the requirements for diplomas in medicine, surgery, and midwifery, which branches are necessary to become a general medical practitioner. While the Council acts for the United Kingdom, there are branch Councils with one or other of which medical students come into contact.

Students in England and Wales apply to Mr. Henry E. Allen, LL.B., B.A., Registrar of the Branch Council for England, 299 Oxford Street, London, W.

Students in Scotland apply to Mr. James Robertson, Registrar of the Branch Council for Scotland, 54 George Square, Edinburgh.

Students in Ireland to Mr. Richard J. E. Roe, Registrar, of the Branch Council for Ireland, 35 Dawson Street, Dublin.

The first thing to be done in seeking entrance to the medical profession is to pass a Preliminary examination recognised by the General Medical Council. The examination must comprise English, Latin, and mathematics, as well as one optional subject, Greek, French, or German, or one other modern language. A complete list of the examinations recognised by the General Medical Council is contained in the "Regulations in regard to the registration of Medical and Dental Students," published by Messrs. Spottiswoode & Co., Ltd., 5 New Street Square, London, E.C., at 6*d.* Before preparing for or passing any Preliminary examination the student should consider and decide what qualification he is to take. Suppose the student is

IN LONDON,

there are at least two courses open to him. First, he may proceed to the courses of study required by one of the bodies in London which grant registrable diplomas. There are two of these—the Society of Apothecaries, Water Lane, Blackfriars, London, E.C., and the Royal Colleges of Physicians and Surgeons, the Examination Hall, Victoria Embankment, London, W.C. Both of these admit to their professional examinations persons who have been registered as medical students (the Royal Colleges do not admit women). On the other hand, the University of London, which typifies the second class of examining body, admits to its professional examinations only those persons who have passed its

Matriculation examination, from which practically the only exemptions are persons holding an Arts degree of a British University.

PROVINCIAL CONDITIONS.

Similar remarks to the foregoing would apply to provincial Universities in England; that is to say, they admit to their degrees in medicine and surgery only those persons who have passed the University entrance examinations, but many of them receive students who are preparing for the Licence examinations of the Royal Colleges, the Apothecaries' Hall, or other examination bodies in the United Kingdom which grant diplomas. Similar remarks apply to Ireland and Scotland, so that before the student prepares for a Preliminary examination he should decide whether or not he is to get his medical qualification as a degree from a University or from a diploma-granting body. It simplifies matters considerably, especially in the subsequent years, to take the best possible Preliminary examination, and we advise the student to pass a University Entrance or Matriculation examination, because it covers the preliminary requirements for a College diploma as well as a University degree.

LOCAL OPPORTUNITIES.

The next bit of advice we desire to give is that students should take advantage as far as possible of local educational facilities. During the past generation there has been a remarkable upheaval in medical education. About thirty years ago a very large proportion of students of medicine gravitated, as a matter of course, to the Edinburgh University, whose reputation had for generations placed it at the top of British medical schools. Numerically, the University still has more medical students than any other medical school in the Empire, but there are now throughout England, Ireland, and Scotland greater facilities for medical education and training locally, and it has become the custom to take the first years there and seek the more advanced experience in other centres if need be. One reason for this is that the earlier subjects of the medical curriculum—viz., biology, chemistry, physics, anatomy, histology, and materia medica—have ceased to be of the great importance that they were to our forefathers. Present-day students do not require to know less of these subjects—in fact, they require to know more—but efficient teachers are more numerous than they used to be and more scattered among the medical schools. Hence such centres as the Edinburgh University are no longer the homes of bright particular stars.

REGISTRATION AS A MEDICAL STUDENT.

A third point upon which a word of advice should be given is that the girl or boy who intends to become a medical practitioner should, at the age of fourteen, have the school studies directed towards preparation for a University or other preliminary examination suitable for registration as a medical student. By that time a copy of the selected medical

school's prospectus should be obtained and the conditions of study noted. The period of professional study does not begin to count until the student is registered as a medical student by the Registrar of England, Scotland, or Ireland, according to where the person is studying, but it is to be noted that no one is so registered until the medical studies actually begin. Most medical schools admit anyone to the classes on paying the fees, but the class certificates do not count in the case of a person proceeding to obtain a medical qualification, unless the person has been registered as a medical student. The cost of registration is 5s., and no person is registered under sixteen years of age. Forms of application for registration are provided by the teachers in every medical school. Five years is the length of the medical curriculum, from the day upon which one has been registered as a medical student. The pharmaceutical examinations were formerly recognised as far as they went (*i.e.*, *pro tanto*), Latin for Latin, chemistry for chemistry, and so on, but this is no longer the case. Certain of the examining bodies, however, recognise the courses of instruction in specified educational institutions, which may be attended by students of pharmacy who afterwards become registered as chemists. The Royal Colleges of Physicians and Surgeons in London recognise the courses of instruction in chemistry and biology taken before the student passes the Preliminary examination in the higher public schools, and in such places as the School of Pharmacy of the Pharmaceutical Society. This is a point which students should look into and take into consideration before deciding upon the course they are to pursue.

We now give the official regulations as briefly as possible :

PRELIMINARY EXAMINATION.

1. *English*.—Grammar, Paraphrasing, Composition, questions on English History and Geography.

2. *Latin*.—Grammar, Translation into English from unprescribed Latin books, Translation into Latin of a continuous English passage, and of short idiomatic English sentences.

3. *Mathematics*.—Arithmetic; Algebra, including easy quadratic equations; Geometry, including the subject-matter of Euclid, Books I., II., III., and simple deductions.

4. *One of the following subjects* :

(a) *Greek*.—Grammar, translation into English from unprescribed Greek books, translation into Greek of short idiomatic English sentences.

(b) *A Modern Language*.—Grammar, translation into English from unprescribed books, translation of a continuous English passage, and of short idiomatic English sentences.

Natives of India or any other Oriental country whose vernacular is other than English are permitted to take the examination in their vernacular in place of Latin, but in no other case is Latin excluded by the General Medical Council. (See, however, special regulations.) Universities have powers in this respect superior to those of the Council. All the University Matriculation or Preliminary examinations in the United Kingdom are recognised and certain of the local examinations, besides the first-class certificate and Medical Preliminary examination of the College of Preceptors and the Senior certificate examinations of the Central Welsh Board; the Leaving Certificate examinations of the Scottish Education Department, the Medical Preliminary examination of the Educational Institute of Scotland; the Middle and Senior grade examinations of the Intermediate Education Board of Ireland, and the Preliminary examination of the Royal College of Physicians and Surgeons in Ireland; provided, in the case of certain of these, that the whole of the subjects of the examinations are passed at one time.

MEDICAL CURRICULUM.

Fifteen subjects at least must be studied, after registration as a medical student, at schools approved by the body which grants the diploma or degree. The subjects are physics, chemistry, elementary biology, anatomy, physiology, materia medica and pharmacy, pathology, therapeutics, medicine, surgery, midwifery, theory and practice of vaccination, forensic medicine, hygiene, and mental diseases. The General Medical Council requires also that at least three professional examinations shall be passed during the curriculum. The First in chemistry, biology, and physics; the Second in anatomy and physiology; and, the Final in the rest of the subjects of the curriculum.

Certain intervals must occur between the examinations, and the Final can be taken at the end of the curriculum. The following are typical courses of study :

FIRST YEAR.	
(For the English Colleges Diploma.)	(For the Edinburgh University degree.)
<i>Winter.</i> Lectures and practical work in anatomy, biology, chemistry, and physics.	<i>Winter.</i> Chemistry, anatomy, and physics. (Examinations in physics and chemistry.)
<i>Summer.</i> Lectures and practical work in chemistry, physics, histology, with lectures on materia medica and practical work in pharmacy. (The examinations in biology, chemistry, and physics to be passed before proceeding further.)	<i>Summer.</i> Botany, zoology, and anatomy (practical). (Examinations in botany and zoology.)
SECOND YEAR.	
<i>Winter and Summer.</i>	<i>Winter.</i>
Lectures, classes, and practical work in anatomy and physiology, with practical pharmacy if not taken in the first year. (The pharmacy examination should now be passed.)	Anatomy and physiology.
	<i>Summer.</i> Anatomy, anatomical demonstrations and histology. (Examination in physiology.)
THIRD YEAR.	
<i>Winter.</i>	<i>Winter.</i>
Lectures and practical work in anatomy and physiology. (Pass the examinations in these subjects.)	Surgery, pathology, anatomical demonstrations, anatomy, hospital attendance, clinical surgery, materia medica (practical), post-mortems, and vaccination. (Examinations in anatomy and practical materia medica.)
<i>Summer.</i> Lectures on pharmacology and therapeutics and forensic medicine; hospital practice and lectures in hospital.	<i>Summer.</i> Practical pathology, clinical surgery, and post-mortems. (Examination in pathology.)
FOURTH YEAR.	
<i>Winter.</i>	<i>Winter.</i>
Lectures on surgery and pathology, clinical lectures; demonstrations of medical and surgical morbid anatomy and demonstrations on midwifery; hospital practice and three months' clerking or dressing in hospital; three months as pathological dresser; microscopic pathology.	Medicine, materia medica, midwifery, clinical medicine, medical out-patients, dispensary, and fevers. (Examination in materia medica.)
<i>Summer.</i> Lectures on midwifery, public health, insanity, and ophthalmic surgery, clinical lectures; hospital practice and hospital clerking and dressing; midwifery cases.	<i>Summer.</i> Operative surgery, public health, forensic medicine, mental diseases, clinical medicine, and midwifery clinics. (Examination in forensic medicine and public health.) The following clinical classes may be attended now or in the fifth winter session: Ophthalmology, diseases of the skin; clinical gynaecology—larynx, ear, and nose; and the diseases of children.
FIFTH YEAR.	
<i>Winter.</i>	<i>Winter.</i>
Lectures on medicine and the diseases of women; demonstrations in ophthalmic surgery; clinical lectures, hospital practice, especially in gynaecological or ophthalmic wards, throat, ear, or orthopaedic departments; attendance at a fever hospital; vaccination and operative surgery.	Clinical surgery, clinical medicine, and surgical out-patients. (Examinations in midwifery, systematic medicine, and surgery.)
<i>Summer.</i> Lectures on special subjects; demonstrations on anesthetics; attendance at a lunatic asylum; clinical lectures and hospital practice.	<i>Summer.</i> Clinical medicine or clinical surgery. (Examination in these two subjects and clinical gynaecology.)

These contrasts are a bird's-eye view of the curriculum. It will be observed that there is a marked difference between pharmaceutical examinations and medical examinations. Candidates for the former are expected to know all the subjects equally well to pass in all of them at one examination. The medical student is, consequent upon

his curriculum, permitted to take the subjects one at a time, and they are so arranged that at the end of the fifth year, and in the final examination, the work of the first and subsequent years is still drawn upon to some extent. In fact, barring the expense, a man who has the ability to qualify in pharmacy would find it easier to pass the medical examinations. The cost is considerable, however. One cannot reckon on much less than 100*l.* for the class and hospital fees during the five years, and the sum may go up to 200*l.*, besides books, instruments, apparatus, and other material and examination fees, say, 50*l.* a year, without reckoning "keep." As has already been indicated, an important element in the last consideration is the student's location—can he attend classes locally, or obtain a qualification not far from his home? If so, he would be unwise not to take advantage of these, for it is of far greater importance to have money to spend in post-graduate studies than to fritter it away in costly living away from home. To assist in counting the cost and measuring the requirements for the different qualifications, we propose to describe as concisely as possible the conditions prescribed by the Universities and the Colleges, and follow these with notes on the institutions which are recognised as proper places for medical students.

UNIVERSITIES IN THE UNITED KINGDOM.

Aberdeen.

The conditions of entry at this University and those of Edinburgh, Glasgow, and St. Andrews are the same. A Preliminary examination in English, Latin, elementary mathematics, and Greek (or French or German) has to be passed. It is held twice yearly, in March and September. Fee 10*s.* 6*d.* Certain equivalent examinations at home and in the Colonies and India are recognised. The course of professional instruction is as outlined above, and is for the degree of bachelor of medicine and bachelor of surgery—M.B., B.Ch. At least two of the five years of study, and at least eight of sixteen specified subjects, must be spent or taken in the Aberdeen University. The remaining three years may be spent and the remaining subjects taken in any University of the United Kingdom, or in any Indian, Colonial, or foreign University, recognised for the purpose by the University Court, or in recognised medical schools or under recognised teachers. There are four professional examinations (arranged as shown above), and the total fees are 23*l.* 2*s.*, with a guinea for each re-examination. Address, Mr. D. R. Thom, M.A., Secretary, The University, Aberdeen.

Birmingham.

The degrees of bachelor of medicine and bachelor of surgery (M.B., Ch.B.) is conferred. Candidates must pass the University Matriculation examination in chemistry or experimental mechanics, English language, literature and history, Latin, mathematics, and a foreign language (or an approved examination). It is held in June and September. Of the five years' curriculum three or four (according to circumstances) must be passed at the University. Candidates may enter the professional examination in chemistry and physics before commencing residence in the University, but after registering as medical students. There are five professional examinations, the fee for each being 2*l.* Address: Mr. Geo. H. Morley, Secretary's Office, The University, Birmingham.

Cambridge.

Here the conditions differ much from the foregoing. Candidates for M.B. and B.C. must be Arts graduates of the University, or shall pass the previous examination, and have five years of professional study. The full curriculum can be obtained at Cambridge, but residence at the University for nine terms (three years) only is required, and the student take at least in each term two courses of lectures or practical in the subjects of the professional examinations, of which there are three for M.B. (the first and third two parts each), and an Act or Thesis. The two years of study out of the University may be taken practically at any medical school in the kingdom, in certain hospitals, or in recognised medical schools abroad. The M.B. is a complete qualification—i.e., it is not required to take B.C. for registration as a medical practitioner. Address, The Registry of the University, Cambridge.

Dublin.

The conditions for medical degrees at the University of Dublin are similar to those at Cambridge University. Candidates must be B.A.s and spend five years in professional study. The Royal University of Ireland, Dublin, is a body whose work is confined to examining. For the degrees of medicine candidates must pass the Matriculation examination, the first University examination, and four Professional examinations. The fees for all these examinations amount to 7*l.* Address,

the Secretaries, Royal University of Ireland, Dublin. A Bill has just been passed by Parliament reorganising these Universities, but the above provisions still stand.

Durham.

The College of Medicine of the University of Durham is at Newcastle-on-Tyne. Candidates for the medical degrees of the University must pass the Matriculation examination, held at Newcastle in March and September, in additional mathematics, English history, physical and general geography, Latin and Greek, French or German. Certain examinations are recognised in lieu of this, including the Matriculations examinations of the Universities of London, Manchester, Liverpool, Leeds, Sheffield, Wales, and Birmingham. Also certain Senior Local examinations and Leaving Certificates. The fee for the examination is 12*l.* 10*s.*, and applications have to be addressed to the Rev. H. Ellershaw, University Offices, North Bailey, Durham. For the degree of M.B., at least one of the five years of professional education must be spent at the College of Medicine, Newcastle-on-Tyne. There are four Professional examinations. Fees, 25*l.* Address, Dr. Robert Howden, Secretary, The College of Medicine, Newcastle-on-Tyne.

Edinburgh.

The conditions of entry at the Edinburgh University are the same as for Aberdeen University. The Professional curriculum has already been outlined on p. 281. The fees for the four Professional examinations amount to 23*l.* 2*s.* Communications should be addressed to the Dean of the Medical Faculty, The University, Edinburgh, and letters respecting the Preliminary examination to Mr. James Dowie, The University, Edinburgh.

Glasgow.

The conditions for the M.B., C.M. degrees of the Glasgow University are similar to those at Aberdeen University. The examination fees are the same. Address, Mr. W. Innes Anderson, Matriculation Office, The University, Glasgow, in respect to the Preliminary examination; but women students should address Miss Galloway, Queen Margaret College, Glasgow. In reference to professional matters address the Dean of the Faculty of Medicine, The University, Glasgow.

Leeds.

The University of Leeds grants the degrees of M.B. and Ch.B., and in association with the Universities of Liverpool, Manchester, and Sheffield, has a Matriculation examination, the subjects of which are English (language or literature) and English history, mathematics, Latin, and two of the following subjects, one of which must be a language: (1) Greek; (2) French; (3) German; (4) some other modern language approved by the Board; (5) elementary mechanics; (6) chemistry; (7) geography or natural history. The examination is held in July and September. Fee, 2*l.* Address, Mr. W. F. Husband, LL.B., Registrar, The University, Leeds. Certain examinations of the Universities of Cambridge and Oxford are accepted in lieu of it. Of the five years' curriculum two years at least must be spent in the Leeds University, one of them subsequent to the first Professional examination, which consists of (1) physics and chemistry; (2) biology. The second examination is in two parts—(1) anatomy and physiology; (2) materia medica and pharmacy. The Final examination comprises (1) pathology, forensic medicine, and public health; (2) medicine, surgery, obstetrics, and gynaecology. The examination fees amount to 15*l.* Address, Professor Grünbaum, Dean of the Faculty of Medicine, The University, Leeds.

Liverpool.

The conditions of entrance upon a course of medical study for the degrees of M.B. and Ch.B. at the University of Liverpool are the same as at the Leeds University, and the Professional examinations are also the same. Address, Mr. K. W. Monsarrat, Dean of the Faculty of Medicine, The University, Liverpool.

London.

The University of London confers the degree of M.B. upon external and internal students, the latter being those who study under the direct control of the University or any one or more of the appointed or recognised teachers of the University; while external students are persons who pursue their medical studies at Institutions recognised by the University. Practically every medical school in the British Isles is recognised for registration as an internal student. In all cases, however, the Matriculation examination or Higher Standard School examination of the University must be passed, but there are certain exemptions for matriculates of home and foreign Universities. All students should read the regulations respecting the courses of study, obtainable from the Academic Registrar at the University, price 3*d.* The Professional examination comprises the Preliminary and Scientific. Part I.: Inorganic chemistry, physics, and bio-

logy, one academic year after registration. Part II.: Organic chemistry, six months after Part I. The Intermediate, in anatomy, physiology, and pharmacology, including pharmacy and materia medica, is taken at the end of the second year; and the Final, in medicine, surgery, midwifery and diseases of women, pathology, forensic medicine, and hygiene, may be taken in two groups, with or without an interval in between. Total fees, 25*l*.

Manchester.

The arrangements at the Manchester University for the degrees of M.B. and Ch.B. are the same as at Liverpool and Leeds. Two years of the curriculum must be passed at the Manchester University, and the Professional examinations taken there. Address, Professor W. Stirling, Dean of the Faculty of Medicine, The University, Manchester.

Oxford.

The curriculum at the University of Oxford for the degree of Bachelor of Medicine extends over a period of seven years, in the course of which the student takes the B.A. degree in the School of Natural Science, and finishes with the degree of B.M. The subjects of study throughout are those of the medical curriculum and responsions. Dr. W. Osler, Regius Professor of Medicine, issues a leaflet concerning the curriculum, which may be obtained from him at the University Museum, Oxford.

St. Andrews.

The conditions at this University are the same as at Aberdeen. Medical students have the privilege of studying at the University College of Dundee, as far as the courses provided there permit, and full particulars respecting the curriculum and examinations may be obtained from Professor C. R. Marshall, Dean of the Faculty of Medicine, University College, Dundee.

Sheffield.

Candidates for the degree of Bachelor of Medicine and Surgery pass the Joint Matriculation examination (see Leeds), and spend at least two of the five years of the Professional curriculum at the Sheffield University. A pamphlet issued by the Faculty of Medicine describes fully the courses of study which must be taken prior to entering for the three Professional examinations, each of which is divisible into two parts. Address, in respect to examinations, Mr. W. H. Gibbons, the Registrar; and, on other matters, Professor J. M. Beattie, M.D., Dean of the Faculty of Medicine, The University, Sheffield.

In addition to the bachelors in medicine and surgery, the Universities grant doctoral degrees. It is unnecessary, however, to enter into details of these, because as a rule they can only be taken after an interval of at least two years from passing the bachelorate.

DIPLOMAS.

Five registrable diplomas in medicine, surgery, and midwifery are obtainable in the United Kingdom—two in England, two in Ireland, and one in Scotland. The curriculum of study in each of these is that laid down by the General Medical Council, and the conditions are similar to those in force in the Universities; but in the case of diplomas, study at any particular medical school for a stipulated period is not enforced, candidates having a wide choice of localities in this respect.

M.R.C.S. ENGLAND AND L.R.C.P. LONDON.

This is the diploma granted by the Conjoint Examining Board appointed by the Royal College of Surgeons, England, and the Royal College of Physicians, London, whose Examination Hall is on the Victoria Embankment, London, W.C. Every candidate for the diploma must pass a Preliminary examination recognised by the Examining Board in England, a list of which may be obtained on application to Mr. Frederick C. Hallett, Secretary, at the above address. Any registered medical student (except women) is admitted to the Professional examinations, provided the requisite instruction has been obtained at a recognised institution or medical school. Instruction in practical pharmacy may be taken at any time before the student presents himself for examination in the subject, and must be given by a registered medical practitioner or a member of the Pharmaceutical Society of Great Britain, or in a public hospital, infirmary, or dispensary. Candidates may present themselves for the First Professional examination immediately after passing the Preliminary examination, provided they can produce certificates of instruction in chemistry, physics, biology, and practical pharmacy, but the last-named subject may be postponed until the later examination. The subjects of the Second Professional examination are:—Anatomy and physiology; and of the Final: Part 1, medicine (including medical anatomy,

pathology, therapeutics, forensic medicine), public health, and practical pharmacy, if it has not been taken before; Part 2, surgery (including pathology, surgical anatomy and the uses of surgical instruments); and Part 3, midwifery and the diseases peculiar to women. The examinations are divisible into parts, and the total fees are 42*l*. The Colleges individually grant the diplomas of M.R.C.S. and L.R.C.P., which are useful to University medical graduates who desire to specialise in surgery or medicine. It is necessary that practitioners who desire to hold certain hospital appointments in London should have one or other or both of the diplomas. It is customary for persons who aim at specialising in surgery to take the Fellowship of the Royal College of Surgeons, and medical specialists frequently take the examination for membership of the Royal College of Physicians. For this diploma the licentiatehip is not a preliminary condition, but the M.R.C.P. is necessary for those who desire to become Fellows of the Royal College of Physicians.

L.S.A.

The Society of Apothecaries of London grants a diploma or licence in medicine, surgery, and midwifery, and full particulars regarding it may be obtained from Mr. Frank Haydon, L.R.C.P., Secretary to the Court of Examiners, Apothecaries' Hall, Blackfriars, London, E.C. Candidates must be registered medical students. The Primary Professional examination is in two parts, the first comprising elementary biology, chemistry, materia medica, and pharmacy, and the second anatomy, physiology, and histology. The Final Professional examination is in two sections, the first of which is in three parts, including (1) principles and practice of surgery; (2) principles and practice of medicine and forensic medicine; (3) midwifery, gynaecology, and the diseases of new-born children. The second section comprises two parts: (1) clinical surgery, and (2) clinical medicine and medical anatomy. A complete course of medical study is outlined in the Regulations issued by the Society. The examination fees amount to 21*l*.

L.R.C.P. AND L.R.C.S. IRELAND.

The Conjoint Board in Ireland of the Royal College of Physicians and the Royal College of Surgeons grants this diploma. The curriculum is as outlined by the General Medical Council, and the four Professional examinations are to be taken at the end of the stipulated periods of study. The Board conducts a Preliminary examination in the subjects specified by the General Medical Council. The examinations are held in the months of March, June, and October—fee 2*l*. 2*s*., which has to be paid to Mr. Alfred Miller, Secretary, The Royal College of Physicians, Kildaro Street, Dublin. Candidates must be at least sixteen years of age. Any registered medical student is admitted to the Professional examinations upon the usual conditions.

L.A.H.

The Apothecaries' Hall of Ireland, 40 Mary Street, Dublin, grants a diploma in medicine, surgery, midwifery, and pharmacy to registered medical students who pass a series of four Professional examinations following upon the stipulated periods of study. Fees for the whole examination, 22*l*. 1*s*.

L.R.C.P.E., L.R.C.S.E., AND L.F.P.&S.G.

This is known as the Scotch Triple qualification, the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons, Glasgow, conjointly granting the diploma. Candidates must be registered medical students, who, subsequent to registration, have spent five winter and five summer sessions at approved medical schools. The courses of instruction are fully set forth in the Regulations for the Diploma, which can be obtained from Mr. James Robertson, 54 George Square, Edinburgh. The examinations are held in Edinburgh and Glasgow, and communication in respect to the latter city should be addressed to Dr. A. Duncan, 242 St. Vincent Street, Glasgow. We note that the course of instruction in practical pharmacy must be of two-and-a-half months' duration at a medical school or public hospital laboratory or dispensary, or under a registered pharmaceutical chemist, or registered medical practitioner who dispenses medicine to his patients. There are four Professional examinations in the curriculum subjects, the total fees being 30*l*.

It may be noted in respect to these diplomas that University graduates are on certain conditions excused from passing certain parts of the examinations.

No person who has not attained twenty-two years is admitted to the Final examinations for degrees or diplomas.

Women are not admitted for the degrees of the Oxford and Cambridge Universities and the diplomas of the Royal English Colleges.

Medical Instruction.

The following is a list of Universities (including their colleges and medical schools), schools of medicine, and recognised scientific institutions at which portions or the whole of the medical curriculum may be obtained. The non-medical colleges are, as a rule, recognised only for the subjects of the Preliminary Science examination.

ABERDEEN.—*The University Medical School* is at Marischal College, where complete instruction is given, clinical practice being obtained in the Royal Infirmary. Fees (including class, hospital, and degree) about 150*l*. The winter session opens on October 13. Secretary, Mr. Donaldson R. Thom, M.A., Marischal College, Aberdeen.

ABERSTWYTH.—*University College of Wales*, a constituent of the University of Wales. The Registrar is Mr. J. Mortimer Green.

BANGOR.—*University College of North Wales*.—Address the Dean.

BELFAST.—*Queen's College* is a constituent of the Royal University of Ireland. Fees (including clinical instruction), about 95*l*. Registrar, Dr. Johnson Symington, M.D., F.R.S.

BIRMINGHAM.—*University Faculty of Medicine*.—Hospital work is taken at the General and Queen's Hospitals. Fees (complete for obtaining the degrees of M.B. and Ch.B.), 154*l*. 19*s*. 6*d*. Dean, Professor Gilbert Barling, M.Sc., F.R.C.S.

BRADFORD.—*Technical College*.

BRIGHTON.—*Technical Day College*.

BRISTOL.—*University College*.—Students can complete in Bristol the entire course of study required for the medical and surgical degrees of the University of London. Clinical practice is obtained at the Royal Infirmary. Composition-fee for complete curriculum (including hospital practice), 153 guineas. Dean, Professor E. Fawcett, M.D. Registrar and Secretary, Mr. James Rafter.

Merchant Venturers' Technical College.

CAMBRIDGE.—*University Medical School*.—Particulars can be had by applying to the Registry of the University, Cambridge.

Girton College, Newnham College.

CAPE TOWN.—*South African College*.

CARDIFF.—*University College of South Wales and Monmouthshire*, a constituent college of the University of Wales. Fees for students preparing for the Preliminary Scientific and the Intermediate examination of the University of London, 57*l*. 10*s*.; for the Conjoint Board (First and Second examinations), 41*l*. 10*s*. For particulars apply to the Registrar, Mr. J. Austin Jenkins, B.A., University College, Cardiff.

CHELTENHAM.—*Ladies' University College*.

CORK.—The Cork School of Medicine is at *Queen's College*, clinical practice being obtained at several local hospitals. The fees for the college lectures and hospital attendance required by the Royal University Hospital amount to about 85*l*., but this does not include examination fees, which are for M.B., B.Ch., R.U.I., 17*l*.; for R.C.P.&S.I., 42*l*. Particulars from the Registrar, Professor W. F. Butler, M.A., Queen's College, Cork.

DERBY.—*Technical College*.

DUBLIN.—*Trinity College* (School of Physic).—Fees, 149*l*. 17*s*. Registrar, Mr. H. W. Mackintosh, M.A., Trinity College, Dublin.

Catholic University Medical School, Cecilia Street, Dame Street.—Minimum cost of lectures, hospitals, special courses, and examination may be put as follows: Royal University, 160*l*.; Conjoint Colleges, 160*l*.; Apothecaries' Hall, 141*l*. Registrar, Dr. E. P. McLoughlin.

Royal College of Surgeons' Schools of Surgery (which includes the Carmichael and Ledwich School).—Total expense of triple qualification (including examination-fees), 160*l*. 13*s*. Registrar, Mr. G. F. Blake, St. Stephen's Green.

Royal College of Science for Ireland.

University College.

DUNDEE.—*University College*.—Classes and hospital practice for the degree of M.B., Ch.B., and the degree in public health. Secretary, Mr. W. Arnot Watterston.

DURHAM.—*The College of Medicine* of the University of Durham is situated at Newcastle-on-Tyne. Clinical practice is obtained at the Royal Victoria Infirmary. Fees, 101*l*. 17*s*., with some extras. Secretary, Professor Robert Howden, M.A., College of Medicine, Newcastle-on-Tyne.

EDINBURGH.—*University Faculty of Medicine*.—Hospital practice is obtainable at the Royal Infirmary, etc., the total number of beds available for clinical instruction of students of the University being 2,120. The fees for M.B. and Ch.B. amount to 23*l*. 2*s*. Minimum class and hospital fees, 115*l*. Doan, Professor D. J. Cunningham, M.D., D.Sc.

School of Medicine of the Royal Colleges.—The courses of instruction required by the Universities of Edinburgh and London and the triple qualification of the Conjoint Board are obtainable here. The minimum cost of the education at this school for the triple qualification, spread over the period

of study and including examination-fees, is 115*l*. Secretary, Mr. R. N. Ramsay, solicitor, 27 Forrest Road, Edinburgh.

Surgeons' Hall School.—Apply to the Secretary.

Medical College for Women.—Minto House, Chambers Street. Secretary, Miss H. F. Mackay.

EXETER.—*Royal Albert Memorial College*.

GALWAY.—*Queen's College*, Galway, is a constituent of the Royal University of Ireland. The fees of the Faculty of Medicine are the same as at Cork. Clinical teaching is obtained at the Galway Hospital. Registrar, Professor Townshend, Queen's College, Galway.

GLASGOW.—*The University Medical School*, including *Queen Margaret College*, Hamilton Drive, Glasgow (Glasgow University School of Medicine for Women). Fees for M.B. and Ch.B., including Matriculation, class-fees, hospital attendance, and Professional examinations, about 152*l*. Secretary, Miss Galloway.

St. Mungo's College and Glasgow Royal Infirmary.—The clinical experience obtained at the Glasgow Royal Infirmary is exceptional. Fees for English and Scottish Conjoint qualifications, about 70*l*. The Dean, Professor A. Macphail will supply a detailed syllabus.

Western Medical School, 44 and 46 University Avenue, Hillhead, Glasgow.—Lectures and demonstrations are given in chemistry, anatomy, surgery, and medicine. Some of the classes qualify for graduation and for Scotch diplomas. Secretary, Mr. J. N. Morton, M.A.

Anderson's College Medical School, Dumbarton Road.—Adjoins the Western Infirmary, where clinical instruction is obtained as well as at the Royal Infirmary. Fees for Scottish triple, about 70*l*. Communications to Professor B. G. Cormack.

HALIFAX.—*Municipal Technical School* (Day Classes).

HUDDERSFIELD.—*Technical College* (Day Classes).

HULL.—*Municipal Technical School* (Day Classes).

LEEDS.—The *School of Medicine* of the University Faculty of Medicine is opposite the Leeds General Infirmary, where clinical instruction is obtained. The approximate cost of medical education to the student in the University of Leeds is 195*l*. 6*s*. (this includes composition-fee for classes, 73*l*. 2*s*. 6*d*., examination-fees, books, and microscope). Dean, Professor A. S. Grünbaum, M.D.

LEICESTER.—*Municipal Technical and Art School* (Day Classes).

LIVERPOOL.—At the *School of Medicine* of the University courses of instruction are provided for the entire medical curriculum. The clinical instruction is obtained at the Royal Infirmary and other local hospitals. The composition-fees for the M.B. and Ch.B. amount to 114*l*. 15*s*., but other class-fees are needed besides the hospital-fee (42*l*.) and examination-fees. Application should be made to the Dean, Mr. K. M. Monsarrat, Faculty of Medicine, The University, Liverpool.

LONDON.—The following medical schools and colleges are constituents of the University of London, where the whole or part of the instruction required for the medical degrees can be obtained:

Charing Cross Hospital, The Medical School, Chandos Street, W.C.—The approximate cost of medical education is given in the prospectus of the medical school as 219*l*. 5*s*., this including composition-fee (120*l*. 15*s*.), examination-fees (42*l*.), books, and instruments. The winter session will be opened on October 1, when Sir Patrick Manson, K.C.M.G., M.D., will deliver the Huxley Lecture. The Dean is Mr. F. C. Wallis, from whom further information regarding the medical school can be obtained.

Guy's Hospital, London Bridge, S.E.—Fees about 160*l*. There is a residential college in connection with the medical school. Dean, Dr. H. L. Eason.

King's College, Strand, W.C.—Fees for the University of London courses: Preliminary Scientific, Part I., 26*l*. 5*s*.; Inter.M.B. and Pre.Sc., Part II., 57*l*. 15*s*. The Conjoint Board Course fees are 5*l*. 5*s*. less. Dean of the Faculty of Science (Medical Division), Professor Peter Thompson, M.D.

London Hospital, Mile End, E.—Fees, 126*l*., or 136*l*. 10*s*. in instalments (sons of medical men 15*l*. 15*s*. less). Contains 914 beds, and is the largest accident hospital in the world. Warden, Mr. Munro Scott, Turner Street, Mile End, E.

London (Royal Free Hospital) School of Medicine for Women, 8 Hunter Street, Brunswick Square, W.C.—Fees, Intermediate and Final M.B. Lond. course, including hospital practice, 135*l*., or 145*l*. in four instalments. The prospectus of the school gives the fees for the entire courses for those medical degrees open to women. Dean, Miss Cock, M.D.

Middlesex Hospital, Cleveland Street, W.—Fees, about 150*l*. Dean, Mr. H. Campbell Thomson, M.D. Residential college, 2*l*. 2*s*. to 2*l*. 10*s*. per week, inclusive of board. The session opens on October 1, when an address will be given by Dr. A. M. Kellas.

St. Bartholomew's Hospital, West Smithfield, E.C.—Fees, 47*l*. 5*s*. annually for four years or a single payment of 173*l*. 5*s*.

Has a residence for students. There are several entrance scholarships, while the total value of scholarships and prizes awarded annually is about 900*l*. New buildings, extending the hospital, have recently been erected at a cost of about 120,000*l*. Dean, Dr. T. W. Shore.

St. George's Hospital, Hyde Park Corner, S.W., with a convalescent branch at Wimbledon.—This is now a purely clinical school. Students who enter for the full course carry out their preliminary studies through London University at either King's College or University College. Fees: annual composition-fee, 31*l*. 10*s*.; clinical students, entrance-fee, 10*l*. 10*s*. There are several entrance scholarships at this hospital. Dean, Dr. E. I. Spriggs.

St. Mary's Hospital, Cambridge Place, Paddington, W.—Fees for full curriculum, 140*l*. or 145*l*. in instalments. Entrance scholarship examinations will be held on September 21 to 23. Sir John Broadbent, M.D., will deliver the introductory address at the opening of the winter session on October 1. Dean, Mr. W. H. Clayton Greene, M.B., B.C., F.R.C.S.

St. Thomas's Hospital, Albert Embankment, S.E.—Fees, consisting of entrance and composition fees, amount to about 140*l*. Medical Secretary, Mr. G. Q. Roberts.

University College, Gower Street, London, W.C.—Faculty of Medical Sciences. Composition fees required by the University of London courses (Preliminary Scientific and Inter. Med. courses), 83 guineas; for the Examining Board in England and Society of Apothecaries (First examination, Parts I., II., III., and IV., and Second examination), 78 guineas. Dean, Professor G. D. Thane, LL.D. The Bucknill Scholarship (135 guineas) and two Medical Entrance Exhibitions (55 guineas each) will be awarded upon the result of examinations to be held in September. Full particulars on application to the Secretary, Mr. W. W. Seton, M.A.

University College Hospital Medical School, University Street, Gower Street, London, W.C.—Composition fees required by the University of London courses (Final M.B., B.S. course), 80 guineas; for the Examining Board in England and Society of Apothecaries (Third examination), 80 guineas. For Dental Students (L.D.S. course), 65 guineas. Dean, Professor Sidney Martin, M.D., F.R.C.P., F.R.S.

Westminster Hospital, Caxton Street, S.W.—Fees, Course for examinations of Conjoint Examining Board, 120 guineas, or 144 guineas in six instalments. Dean of the School, Mr. E. Percy Paton, M.D., M.S., F.R.C.S. Information can also be had from Mr. W. Fryer, the Secretary of the Medical School.

Bedford College, York Place, Baker Street, London, W.
Royal Holloway College, Englefield Green, Surrey.
Royal College of Science, South Kensington, S.W.
Birkbeck Institute, East London Technical College, Central Technical College, Westfield College, Polytechnic Institute, Battersea (Day Classes).

MANCHESTER.—*University School of Medicine*.—Fees for M.B., 128*l*. 5*s*., exclusive of special courses. Dean, Professor W. Stirling, M.D.

NOTTINGHAM.—*University College*.

OXFORD.—The medical curriculum at *The University* generally extends over a period of seven years, but can be shortened to six years in the case of students who are able to pass the Preliminary Chemistry and Physics examinations at the end of their first term. The clinical work is taken at a metropolitan or provincial medical school. Students entering the University for the purpose of medical study should interview Dr. W. Osler, the Regius Professor of Medicine at the University Museum.

PLYMOUTH.—*Municipal School of Science* (Advanced Day Classes).

PRESTON.—*Harris Institute*.

READING.—*The College*.

ST. ANDREWS.—*The University Faculty of Medicine*.—The clinical practice is obtained at the Dundee Infirmary. The fees are 4*l*. 4*s*. for the theoretical and 3*l*. 3*s*. for the practical classes in subjects for graduation per subject. Secretary and Registrar, Mr. Andrew Bennett.

SHEFFIELD.—*University Faculty of Medicine*.—Composition-fee, 80*l*.; hospital practice (Royal Infirmary and Royal Hospital), 36*l*. 15*s*. There are also extra fees for pharmacy, vaccination, and instruction in anaesthetics. Dean, Dr. J. M. Beattie, M.A.

SOUTHAMPTON.—*Hortley College*.

SWANSEA.—*Technical College* (Day Classes).

Dentistry.

To Become a Dentist.

The steps necessary to qualify as a dentist are:

1. A Preliminary examination in general education.
2. Registration as a student.
3. Professional education (extending over four years subsequent to the above).
4. Professional examination.

PRELIMINARY EXAMINATION.

The General Medical Council require that previous to registration the student shall have passed an examination in English, Latin, mathematics, and an optional subject, which may be Greek or one of the modern languages. It is necessary that the above subjects should all be passed at one examination. Matriculation examinations are the best to take; they should be passed without difficulty by a boy leaving school and ensure entry to all professions. The examining bodies whose examinations are recognised are those given on p. 286.

REGISTRATION AS A STUDENT.

After passing the Preliminary examination the student should commence his professional studies by entering as a hospital student in dental mechanics or by apprenticeship to a registered dental surgeon, and *within fifteen days* of the date of his apprenticeship he should register at the office of the General Medical Council as a dental student. The candidate is also recommended to register as a medical student, not necessarily to qualify as a doctor, but in order to be able to do so if he should so desire at a later period. The work for the dental qualification is largely the same as for the medical, and time so spent counts as part of the medical curriculum should the student be registered. Students are obliged to devote two years to mechanical dentistry, but four or five years are commonly devoted to it; and it may here be stated that the extra time is by no means lost, a thorough knowledge of this department being essential, and the more practice the student has in this way the more perfect he becomes. The student should arrange

at this time, if possible, to receive instruction in chemistry, chemical physics, and practical chemistry, so that he may prepare himself for the Preliminary Science (L.D.S.) examination.

PROFESSIONAL EDUCATION.

Three examinations have to be passed—Preliminary Science, the First Professional, and the Second Professional examinations. The following certificates of professional study have to be produced before admission to these examinations:

Preliminary Science Examination.—Of having received instruction at a recognised institution in chemistry and physics. There must not be less than 180 hours' instruction and laboratory work in chemistry and 120 hours' instruction and laboratory work in physics. These courses may be commenced before the student passes the Preliminary examination in general education, and need not be completed in one year nor run concurrently.

First Professional Examination.—(1) Of not less than two years' instruction in mechanical dentistry. (2) Of registration as a dental student. (3) Of having attended at a recognised dental hospital and school: (a) a course of lectures on dental metallurgy; (b) a course of practical dental metallurgy; (c) a course of lectures on dental mechanics; (d) a course of practical dental mechanics, including the manufacture and adjustment of six dentures and six crowns.

Second Professional Examination.—(1) Of having been four years in the acquirement of professional knowledge, subsequent to date of registration. (2) Of having attended at a recognised hospital and school: (a) a course of dental anatomy and physiology; (b) a separate course of dental histology, including the preparation of microscopical sections; (c) a course of dental surgery; (d) a separate course of practical dental surgery; (e) a course of not less than five lectures on the surgery of the mouth; (f) a course of dental bacteriology; (g) a course of dental materia medica. (3) Of having attended at a recognised hospital the practice of dental surgery during two years. (4) Of having attended at a recognised medical school: (a) a course of lectures on anatomy; (b) a course of lectures on physiology; (c) a separate course of practical physiology; (d) a course of lectures on surgery; (e) a course of lectures on medicine. (5) Of having performed dissections at a recog-

nised medical school during not less than twelve months. (6) Of having attended at a recognised hospital or hospitals the practice of surgery and clinical lectures on surgery during two winter sessions. (7) Of being twenty-one years of age.

PROFESSIONAL EXAMINATIONS.

1. The *Preliminary Science examination* consists of chemistry and physics, and candidates must have the required Preliminary examination certificates, and must pass both subjects together. They may go in for this examination before entering a dental school.

2. The *First Professional examination* consists of mechanical dentistry and dental metallurgy. Candidates must have passed Preliminary Science examination and have the certificates of attendance at lectures, &c. The dental metallurgy examination is by written paper.

3. The *Second Professional Examination* consists of:

Part I.—General anatomy and physiology,
General pathology and surgery.

Part II.—Dental anatomy and physiology,
Dental pathology and surgery,
Practical dental surgery.

The two parts may be taken separately or together. The examination is partly written, partly practical, and partly oral. The written examination comprises general anatomy and physiology, general pathology and surgery, dental anatomy and physiology, and dental pathology and surgery. At the Practical examination candidates may be examined on the treatment of dental caries, they may be required to prepare and fill cavities with gold, inlay, or other materials, or to do any other operation in dental surgery, also on the mechanical and surgical treatment of the various irregularities of children's teeth. The oral examination in each part comprises the several subjects above mentioned.

The fee for the diploma of the licence in dental surgery is twenty guineas, and is payable in the following manner:

	£	s.	d.
Preliminary Science examination, each admission	3	3	0
First Professional examination, each admission	2	2	0
Second Professional examination, Part I. ...	2	2	0
Second Professional examination, Part II. ...	3	3	0
Amount payable before grant of diploma	10	10	0
	21	0	0

The above requirements are those of the Royal College of Surgeons of England and have been given somewhat fully, as other colleges work on the same lines. The curricula of other bodies differ only in details.

Royal College of Surgeons, Edinburgh.—Two examinations are taken during the collegiate curriculum—viz., *First*, in anatomy, chemistry, physics, and physiology; *Second*, surgery, medicine, dental therapeutics, dental anatomy and physiology, dental surgery and pathology, dental mechanics and dental metallurgy. Fees, 15*l.* 15*s.* Address: Mr. D. L. Eadie, 54 George Square, Edinburgh.

Faculty of Physicians and Surgeons, Glasgow.—The examinations and fees are much the same as in Edinburgh. Address: Mr. A. Duncan, B.A., LL.D., 242 St. Vincent Street, Glasgow.

Royal College of Surgeons in Ireland.—There are two professional examinations—the Primary and the Final dental examinations—the subjects and conditions being as prescribed by the General Medical Council. Fees, 21*l.* Address: The Registrar, Royal College of Surgeons, Stephen's Green, Dublin.

The probable cost of qualifying for the L.D.S. examination, including class fees, pupilage, instruments, &c., may be put at from 180*l.* to 250*l.* In this respect the different dental hospitals and schools vary as regards the amount charged for fees for lectures, examinations, etc. The intending student will be influenced in his choice of a school by various considerations.

UNIVERSITY QUALIFICATIONS.

We shall here briefly indicate the conditions regulating the granting of University degrees and diplomas.

Birmingham.—The University confers the degrees of bachelor and master of dental surgery (B.D.S. and M.D.S.) and a diploma in dental surgery (L.D.S.). The curriculum for the diploma in dental surgery extends over four years, and that for the degree of B.D.S. over five years from the date of registration as a dental student. The total cost for the L.D.S. curriculum, including hospital and examination fees, is 112*l.* 13*s.*, and that for the B.D.S. 146*l.* 19*s.* The M.D.S.

degree can be taken by thesis twelve months later. The Hon. Secretary of the Dental Department is Mr. John Humphreys, M.D.S.

Leeds.—In the University School of Dentistry the diploma in dental surgery (L.D.S.) is granted on the General Medical Council's conditions. The courses of instruction must be approved by the University. The examinations are similar to those of the Royal College. Degrees of bachelor of dental surgery (B.Ch.D.) and master of dental surgery (M.Ch.D.) are also granted. For the former candidates must pass the Matriculation examination of the University, and thereafter pursue approved courses of study for not less than five academic years (two of them in the University subsequent to the First examination) and complete the pupilage or hospital attendance, or both, as prescribed by the University. Clinical practice is obtained at the Leeds Public Dispensary and the Leeds General Infirmary. There are three Professional examinations, the G.M.C. subjects being included. Composition-fee for requisite courses, 60*l.* and 65*l.*, respectively. The approximate cost of professional education to the dental student in the University of Leeds is put down at 298*l.* 15*s.* 6*d.* for degree and 272*l.* 15*s.* for diploma. Professor A. S. Grünbaum is Dean of the Faculty of Medicine.

Liverpool.—At the University School of Dental Surgery the dental degrees are B.D.S. and M.D.S., and examinations are also held for the L.D.S. diploma. Clinical practice is taken out at the Liverpool Dental Hospital. The fees for the L.D.S. Liverpool are 58*l.* 10*s.*, of other licensing bodies 61*l.* 10*s.* Two years' instruction in mechanical dentistry and two years' dental hospital practice costs 100*l.* For the B.D.S. degree the lecture-fees are 67*l.* 10*s.*, and the clinical practice costs 126*l.* For the M.D.S. extra courses are required, for which a composition-fee of 13*l.* 15*s.* is charged. The general hospital practice, for which a fee of 10*l.* 10*s.* is charged, is required in addition to each of the above composition-fees. Mr. W. H. Gilmour, M.D.S., is the Secretary of the Board of Dental Studies.

Manchester.—The Dental Department of the University is arranged for instruction of students for the B.D.S. and M.D.S. degrees and the dental diplomas of the University R.C.S. and other licensing bodies. Any Preliminary examination accepted by the General Medical Council suffices for the diploma in dental surgery, but for the degree the Matriculation examination of the University or some equivalent accepted by the Joint Matriculation Board is required. The degree cannot be obtained until five years after registration as a dental student. The M.D.S. may be conferred not less than one year after attaining the B.D.S., either (a) on presentation of a dissertation or (b) on examination. The clinical practice is obtainable at the Victoria Dental Hospital. The composition-fees for the B.D.S. is 63*l.*, for the L.D.S. Liverpool diploma 57*l.* 15*s.*, for the L.D.S. England 63*l.* The fees payable at the Dental Hospital are 130*l.* (for B.D.S.) or 100*l.* (for L.D.S.). Fees for the conferment of the degree or registration of the diploma and payment for chemical apparatus are extra. Professor William Stirling, Dean of the Medical Faculty, should be addressed for further particulars of the Dental Department.

Dublin.—For the degree (M.Dent.Sc.) it is necessary to be B.A. of Dublin, to study at the University medical or dental school, and to pass two Professional examinations. The L.D.S. conditions are similar to those in England.

After Qualification.

What is a man to do when he is qualified? This is a question which is very often asked, and the recently qualified man is strongly advised to go as an assistant to some qualified dentist for several years. The insight into the ways of private practice and the knowledge gained in the treatment of private patients as compared with hospital work (to say nothing of the daily experience) will be of lasting benefit to him when the time comes for his starting practice on his own account. He will find that these few years have not been lost time, and he will have all the more confidence in his own abilities than if he had started practice right away.

As regards salaries paid to qualified assistants, each dentist seems to have a method of his own. Some pay commission on the amount of work done, others do not; but salaries may be said to vary from 2*l.* to 4*l.* a week. A good man can always command a good salary.

Unqualified practice by companies and by individual persons has, in the opinion of registered dentists, been harmful to the practice of dentistry, but there is no doubt the general public is beginning to discriminate between qualified and unqualified. The British Dental Association is promoting a Dental Bill with a view to limiting dental practice by unregistered persons. Some interesting par-

particulars of the lines upon which it is proposed to work were given in the *C. & D.*, July 18, p. 93.

Although a large number of dentists enter the profession each year, at the present time it is by no means overrun, and a young man who is smart, of a mechanical turn of mind, and has good ability, will find nothing to regret in entering the dental profession.

APPROVED DENTAL INSTITUTIONS.

The following brief notes refer to the dental colleges and hospitals where instruction, as approved by the various licensing bodies, can be obtained. Fuller particulars can always be had by addressing the Dean or Secretary of the institution.

BIRMINGHAM.—University Dental Department and Dental Hospital.

BRISTOL.—University College Faculty of Medicine, Royal Infirmary, and General Hospital.

DUBLIN.—School of Dentistry in connection with the Incorporated Dental Hospital of Ireland, Lincoln Place.

EDINBURGH.—Dental Hospital and School, 31 Chambers Street. Dean, Mr. William Guy, 11 Wemyss Place.

EXETER.—Dental Hospital. Mr. W. A. Hooker, Secretary, 24 Southernhay West, Exeter.

GLASGOW.—Dental Hospital and School, 15 Dalhousie Street. Secretary, Mr. D. M. Alexander, 97 West Regent Street.

LEEDS.—University School of Dentistry.

LIVERPOOL.—University Dental Department and Dental Hospital.

LONDON.—*Charing Cross Hospital Dental Department*, Chandos Street, W.C.—Composition-fee for dental students (two years' curriculum), 57*l.* 15*s.* in one sum or 65*l.* 2*s.* in two instalments. Dean, Mr. Christopher Addison.

Guy's Hospital Dental School, London Bridge, S.E.—The fees are dental lectures and demonstrations and dental practice only, as required for L.D.S.Eng., 50*l.* Inclusive fee for students entering for the course of instruction for the L.R.C.P., M.R.C.S., and L.D.S.Eng. is 199*l.* 10*s.* Instruction in dental mechanics is 52*l.* 10*s.* per annum. The Dean is Dr. H. L. Eason.

King's College, Strand, W.C.—Composition-fee for dental students is 63*l.* Hospital work for one year, 10*l.* 10*s.* Dean, Mr. Peyton T. B. Beale.

London Hospital, Mile End, E.—Composition-fee, 42*l.* Mr. Munro Scott, Warden.

Middlesex Hospital, Berners Street, W.—Composition-fee, 56*l.* 14*s.* Dean, Mr. J. Murray.

National Dental Hospital and College, Great Portland Street, W.—Fees for complete curriculum, 40*l.*; for three years' mechanical training, 50*l.* per annum; composition-fee (including two years' pupillage, hospital practice, and lecture, but not including medical subjects), 120*l.* Dean, Mr. Sidney Spokes.

Royal Dental Hospital of London and London School of Dental Surgery, Leicester Square, W.C.—Fees for instruction in mechanical dentistry and the two years' hospital practice and lectures for L.D.S., 150*l.*; for the two years' hospital practice and lectures, 53*l.* 3*s.* The approximate cost of education for the diploma is stated in the prospectus to be 280*l.* 14*s.* (this includes fees, books, and instruments).

St. Bartholomew's Hospital, Smithfield, E.C.—Fees for general subjects for dental students, 52*l.* 10*s.* Dean, Mr. T. W. Shore.

St. George's Hospital, Grosvenor Place, S.W.—Dean, Mr. F. Jaffrey.

St. Mary's Hospital, Paddington, W.—Fee for general hospital practice and lectures for L.D.S.Eng., 52*l.* 10*s.* Dean, Mr. H. A. Caley.

St. Thomas's Hospital, Albert Embankment, S.E.—Dean, Mr. J. H. Fisher.

University College, Gower Street, W.C.—Composition-fee for L.D.S., 63*l.* 5*s.*, or without chemistry, physics, and materia medica, 52*l.* 10*s.* Dean, Mr. Sidney Martin.

Westminster Hospital, Broad Sanctuary, S.W.—Fees for the general surgical practice and lectures for the L.D.S.Eng., 52*l.* 10*s.* Dean, Mr. E. P. Paton.

MANCHESTER.—University Dental Department and Victoria Dental Hospital.

NEWCASTLE-ON-TYNE.—Royal Infirmary and Dental Hospital.

SHEFFIELD.—University Dental Department.

SOUTHAMPTON.—Hartley University College.

Veterinary Surgery.

Increased attention is now being given by educational authorities to instruction in veterinary science and practice, and degrees are now granted by several Universities; but the statutory conditions are that only those who are registered as such by the Royal College of Veterinary Surgeons, Red Lion Square, London, W.C., may so call themselves or hold certain public appointments. The Royal College requires candidates for the diploma M.R.C.V.S. to pass an examination in general knowledge recognised by the General Medical Council, and the list of approved examinations which the Royal College conducts is the same as that of the General Medical Council. In England the Medical Preliminary examination of the College of Preceptors, and in Scotland and Ireland the Educational Institutes' examination are those which veterinary students usually enter for. After passing the examination the student has to enter on a definite course of study at a veterinary college and pass an examination at the end of each college year, the Final when he reaches the age of twenty-one. The subjects of the curriculum are sufficiently indicated by the following outlines of the examination subjects:

First or "A" examination subjects are—

1. Anatomy of the domesticated animals: bones, ligaments, joints.

2. Chemistry and elementary physics.

3. Biology: Elementary zoology and botany.

To be taken at the end of the first year.

Second or "B" examination subjects are—

1. Anatomy of the domesticated animals.

2. Histology and physiology.

3. Stable management, the manipulation of the domesticated animals, and the principles of shoeing.

To be taken a year after "A."

Third or "C" examination subjects are—

1. Morbid anatomy, pathology, and bacteriology.

2. Materia medica, pharmacy, therapeutics, and toxicology.

3. Veterinary hygiene and dietetics.

To be taken a year after "B."

Fourth or "D" examination subjects are—

1. Principles and practice of veterinary medicine and clinical medicine.

2. Principles and practice of veterinary surgery, clinical surgery, obstetrics, and shoeing.

3. Meat inspection.

To be taken a year after "C" and when the candidate is twenty-one.

The examinations are conducted in July and December in London and in the provinces by the Examiners of the Royal College of Veterinary Surgeons, the fee for each examination being 5*l.*

DEGREES IN VETERINARY SCIENCE.

The London University grants the degree B.Sc. in veterinary science. Candidates must pass the Matriculation examination of the University, which, of course, entitles them to commence their professional studies for the M.R.C.V.S.; and subsequently they are required to study for four years, passing a Preliminary examination in inorganic chemistry and physics, an Intermediate in organic chemistry, biology, veterinary anatomy, and veterinary physiology, and at the end of the four years a Final examination in veterinary pathology and veterinary hygiene. Similar degrees are granted by the Universities of Edinburgh and Glasgow, and the University of Manchester grants a diploma in veterinary State medicine.

VETERINARY TEACHING COLLEGES.

The following Colleges are affiliated to the Royal College of Veterinary Surgeons, and the courses of instruction are arranged in accordance with the four years' curriculum needed for obtaining the College diploma. In estimating the cost of veterinary education the amount required for microscope, instruments, and books may be taken as 50*l.*, while examination-fees are about 2*l.*

LONDON.—*Royal Veterinary College* (founded 1791; incorporated 1875), Great College Street, Camden Town, London, N.W.—Educational fee, 84*l.*, paid in four instalments, and 2*l.* 12*s.* 6*d.* library fees. There are also fees for occasional students as follows: Anatomy, 8*l.* 8*s.*; botany, 3*l.* 3*s.*; chemistry, 5*l.* 5*s.*; pathology, 5*l.* 5*s.*; physiology, 5*l.* 5*s.*; practical chemistry, 3*l.* 3*s.*; practical histology, 3*l.* 3*s.*; practical pathology, 5*l.* 5*s.*; surgery, 5*l.* 5*s.*; and veterinary

medicine, 5*l.* 5*s.* Principal and Dean, Professor Sir John McFadyean, M.R.C.V.S. Secretary, Mr. R. A. N. Powys.

DUBLIN.—*Royal Veterinary College of Ireland*, Pembroke and Shelbourne Roads, Dublin.—Fees, 21*l.* per session, with 1*l.* 1*s.* entrance-fee. Principal, Professor A. E. Mettam, B.Sc., M.R.C.V.S.

EDINBURGH.—*Royal (Dick) Veterinary College*, Clyde Street, Edinburgh (founded 1823). Entrance and class fees, 58*l.* 16*s.*, in four payments, with an extra fee of 5*l.* 5*s.* for students returning for a portion of the fourth year's class. The Carnegie Trust pays students' fees at this College if the conditions laid down by the trustees are fulfilled. Principal,

Professor J. R. U. Dewar, F.R.C.V.S. Secretary, Mr. Robert Anderson, S.S.C.

GLASGOW.—*Glasgow Veterinary College* (established and incorporated 1862), Buccleuch Street, Garnethill, Glasgow. Fee, 60*l.*, or 63*l.* in instalments. The Carnegie Trust pays the fees of students who fulfil the conditions. Principal, Professor J. McCall, F.R.C.V.S. Secretary, Mr. Wales.

LIVERPOOL.—*University Veterinary School* (formerly the New Veterinary College founded in Edinburgh by the late Professor Williams).—Fees for four years' lectures and all other instruction, 75*l.* 12*s.*, payable in four instalments of 18*l.* 18*s.* Principal, Professor W. Owen Williams.

Science.

The Profession of Analytical Chemist.

To follow the calling of a professional or analytical chemist needs no qualification; anyone may set up in practice as an analyst and call himself so without statutory offence so long as he does not call himself "chemist" or keep open shop for the sale of drugs and poisons. There are, however, restrictions to the appointment of analysts by public bodies under the Sale of Foods and Drugs Acts and Fertilisers and Feeding-stuffs Act, the applicant for which must be a Fellow of the Institute of Chemistry. Analysts are almost of necessity specialists in one or more of the branches of chemical analysis, the practice in itself not paying sufficiently without being able to advise clients in difficulties on technical subjects. The fact that the successful analyst is to a great extent a consulting chemist makes a long and thorough course of training essential. The majority of workers in this branch of science commence their training during school-days, and continue it at University or technical college until ready to apply it as teachers or in the laboratory or chemical works. Pharmaceutical and medical students frequently take science degrees and examinations of the Institute of Chemistry—the hall-marks of analytical chemists—and it is for these or other intending science students that the following particulars are given. Those who wish to practise as analytical chemists solely may commence by an apprenticeship to such a person; but even in this and all other cases it is far preferable to first undergo a general training in chemistry, physics, and mathematics at one of the numerous institutions. The special training, which is essential to success, should be obtained on a good foundation of general analytical work, especially considering that the majority of students cannot forecast the particular work in which they will engage at the completion of their period of study, in general taking that course which is offered to them. A collegiate course should not be commenced until a suitable Preliminary certificate has been obtained. In most colleges this is required; but if the college is not affiliated to a University the Matriculation examination of the London or other University should be obtained with a view to eventually taking the Bachelor of Science degree and registering as a student of the Institute of Chemistry. The usual professional period of study is for three years (a few institutions grant a diploma after a two years' curriculum, but three years' study represents the minimum time in which the average novice student can gain an adequate knowledge of the general work of analytical chemistry), for three years gives ample opportunity of obtaining both qualifications, which each add to the other's value, the B.Sc. degree from the academical standpoint, the Institute of Chemistry's Associateship or Fellowship from a practical and technical view. The student must not forget that after a purely college course he will require technical instruction before being able to obtain remunerative employment. The alternative course of the Institute of Chemistry—i.e., two years' collegiate course and two years' special training under a Fellow of the Institute—is more suitable to many on account of this specialised work during a portion (usually the latter) of the curriculum, and also in making the Final examination easier to negotiate successfully, while allowing the successful candidate to quickly enter the ranks of wage-earners. The student taking this alternative course will have to take the B.Sc. degree as an external student of the University of London unless he completes a third year at college; also he should not fail to remember that

the Intermediate examination of the Institute of Chemistry is a stiff examination in general practical analysis, with some theory of chemistry, which subjects must not be allowed to get rusty during his second two years' special training, and that this examination and the Final B.Sc. make a good combination to take the same year.

Appointments of public analysts being only granted to Fellows of the Institute of Chemistry, many chemistry students take the examinations as a matter of course. Analysts for the Government Laboratories are taken from among young Excise and Customs officers, who then undergo special training at the Royal College of Science and in the Government Laboratories; also a limited number of diplomaed young men are selected by the Principal of the Government Laboratories. For other appointments the curriculum and examinations of the Institute of Chemistry serve as a model for the necessary collegiate course, and hence should be taken by those desiring to practise as analytical chemists.

Chemistry.

THE INSTITUTE OF CHEMISTRY OF GREAT BRITAIN, 30 Bloomsbury Square, London, W.C., was founded in October 1877 to promote the better education of persons desirous of becoming public and technical analysts and chemical advisers on scientific subjects, and to examine such persons and grant certificates of competency.

The Fellowship of this institution (F.I.C.) is now recognised universally as a qualification, thus differing from a Fellow of the Chemical Society (F.C.S.), who obtains the support and testimony of five Fellows of the Chemical Society of his fitness to be a member thereof on account of his interest in chemistry. The following outline gives the requirements of the Institute of Chemistry for their Fellowship:

The student on attaining seventeen years of age should register as a student of the Institute so as to be exempt from disadvantages which may be caused by changes in the regulations. The General Medical Council's Preliminary certificate suffices for registration, and Latin is not essential. A full list of approved certificates is given in the Institute's Book of Regulations, including also much useful information, advice, and examination papers; price 1*s.* from the Registrar, at the above address. Registration-fee, 5*s.* per annum. The candidate at the time of application should be working at an approved scientific institution or under a F.I.C. in a laboratory approved by the Council of the Institute. The student then proceeds to take the course of training required by the Institute—namely, either to study in an approved college for three years or to spend two years as a pupil of a F.I.C. and two years in an approved college. Practically all the technical colleges in the United Kingdom are approved and provide, as also many University colleges, special courses of instruction conforming with the Institute's requirements. On satisfying the Council of the Institute that he has undergone a course of instruction in accordance with the regulations, in theoretical and practical chemistry, physics, mathematics, and a fourth subject—namely, higher physics, advanced mathematics, or mechanics and chemical engineering or metallurgy, or geology and mineralogy, or physiology or bacteriology, or agriculture, or botany, or biology, which must be strictly complied with, the student may enter for the *Intermediate examination* (fee 5*l.* 5*s.*). Students registering after January 1, 1909, must take a course of instruction in botany for the Final examination for the Food and Drugs branch and for the branch of biological chemistry biology will be compulsory. Naturally the requirement will be best complied with by taking it as the fourth subject.

The holder of a degree in science is eligible for admission to this examination provided chemistry and physics were taken as subjects for the degree, and mathematics in either

the Final or Intermediate examination. This method of entry gives an opportunity for those who cannot afford or who have not time to attend the full course of instruction for the curriculum, since the London University B.Sc. external degree can be taken in the required subjects. Candidates taking first or second class honours or special distinction in chemistry for the Final examination of Universities in accordance with the Institute's requirements for other subjects are, generally speaking, exempted from the Intermediate examination. A full list of exemptions is contained in the regulations and a pamphlet issued by the Institute.

All candidates, whether graduates in science or not, must pass the *Final examination*; fee, 5*l.* 5*s.*, or for candidates exempted from the Intermediate examination 10*l.* 10*s.* This examination comprises, in addition to a general knowledge of all branches of chemistry, a thorough knowledge of one branch—mineral chemistry, metallurgical chemistry, physical chemistry, organic chemistry, analysis of food and drugs and water (including a compulsory examination in therapeutics, pharmacology, and microscopy), or biological chemistry. The candidate on passing the examination is granted the annual certificate of Associate of the Institute of Chemistry, and three years later the F.I.C. is conferred on evidence that the Associate has during that time been continuously engaged in the study and practical work of applied chemistry. After January 1, 1910, candidates will be required to translate French and German technical literature into English. The aid of dictionaries will be allowed.

Associates or Fellows are allowed to enter for examinations in the branches of (1) Food and drugs, to qualify for public analyst, fee 5*l.* 5*s.*; (2) biological chemistry, fee 5*l.* 5*s.*; (3) a special examination in technological chemistry, for which the candidate must be an Associate or Fellow and produce evidence of practical technological training. The examination is in various branches of technology—e.g., gas-manufacture, steel-manufacture, and fat and oils industry; fee 3*l.* 3*s.* Special certificates are given for candidates who pass these examinations, but in all other cases yearly certificates only are issued; nor can Associates or Fellows enter for any of the other branches.

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY.—This institution, incorporated in 1907, comprises a group of associated colleges with the principal seat at South Kensington. For its purposes of giving highly specialised instruction, with full facilities for advanced training and research in science, especially as applied to industry, the governing body carries on the work of the Royal College of Science, the Royal School of Mines, and may establish other institutions or departments of instruction. The City and Guilds College (formerly known as the Central Technical College) is to be an integral part of the Imperial College. Candidates for admission to the college's first year course must be over seventeen years old, and show that they have (1) received a general education equivalent to the standard usually marked by the University Matriculation; (2) an adequate scientific training to enter upon the course they desire. The City and Guilds Matriculation examination satisfies these two conditions. Candidates for other courses must show a correspondingly higher standard of scientific training. The condition for the future award of diplomas will be announced later, but the diplomas of A.R.C.S. and A.R.S.M. will be issued to students who entered the respective colleges in 1905, 1906, 1907, on completing their course until 1910, and that of A.C.G.I. until further notice by the Council of the City and Guilds Institute. The principal departments of the Imperial College are mathematics, mechanics, physics, chemistry, biology, geology, engineering (civil and mechanical), engineering (electrical), mining, and metallurgy. Students specialising in (1) civil and mechanical or electrical engineering will be regarded as students of the City and Guilds College; (2) mining or metallurgy as students of the Royal School of Mines; (3) physics, chemistry, geology, biology, or mechanics at present as students of the Royal College of Science. Intending students should write to the Secretary of the Imperial College of Science and Technology, Exhibition Road, London, S.W., or the City and Guilds of London Institute, Gresham College, Basinghall Street, London, E.C. We append brief particulars of the latter institute.

THE CITY AND GUILDS OF LONDON INSTITUTE, founded in 1878, was one of the earliest bodies to promote systematic instruction in technical industries. Of the four branches

of the Institute the *Central Technical College* and the *Finsbury Technical College* are of interest to our readers. At the former College courses of instruction for the diploma examination cover a period of three years, and are in chemistry, civil and mechanical engineering, and electrical engineering, and opportunities are given for original research and the application of pure science to industrial processes. The courses at the Finsbury College are similar but shorter, the day courses covering a period of two to three years, and evening classes are held at this College. Certificates are given to students of sufficient merit. For entry to either of these Colleges the student must pass the College Matriculation examination, or the London University Matriculation certificate is accepted with certain restrictions. The latter course is more desirable in order to become an internal student of the University, and obtain the B.Sc. degree during the college curriculum.

TECHNICAL COLLEGES which have courses of special instruction adapted to the industrial requirements of the district are now common throughout the country. The student is advised to apply to the secretary of the local technical institution for advice and particulars, as it would be impossible to detail them, since they are so numerous, in the space available at our disposal.

Degrees in Science.

The University of London, as also the Royal University of Ireland, grants degrees of B.Sc. and D.Sc. in the various departments without the necessity of the candidate complying with the curriculum of not less than three academical years, which is required by the Universities of Birmingham, Manchester, Leeds, Liverpool, Sheffield, and the Scotch Universities.

The *London University* requires the student to pass the Matriculation examination, Latin not now being essential, and he may after the lapse of one year thereafter proceed to the *Intermediate examination* for a pass in four subjects taken from the following seven—viz., pure mathematics, applied mathematics (mechanics), experimental physics, chemistry, botany, zoology, and geology. The examination-fee is 5*l.* After passing the Intermediate, the student may proceed one year later, but at least three years after Matriculating, for the *Final examination*, in three of ten prescribed subjects—those studying chemistry, of course, take that subject—and mathematics and physics. Fee 5*l.* The candidate may take an honours degree in one of the subjects and an appropriate subsidiary subject. Instead of taking this Final examination in writing and practical work, the student may take the degree by research. In this case he must spend two years after the Intermediate examination in carrying on a research in an approved school or schools, but before starting he must advise the Board of Studies of the University and get approval of the subject. The student who takes a course of instruction at a School of the University or under a recognised teacher of the University, is eligible for registration, in the subjects recognised, after Matriculation as an Internal Student, and can thus obtain the advantages of the less severe examination for the Internal Student compared with that for the External Student, who is not required to undergo a curriculum. Full particulars in regard to these and other matters connected with the B.Sc. will be found in "Regulations Relating to Degrees in Science," obtainable on application to the Principal, University of London, South Kensington, S.W. The D.Sc. degree is granted not less than two years after graduating as B.Sc., the applicant submitting a thesis based upon his own research. Fee 20*l.* Degrees are granted in several branches of science besides natural and physical science.

The *English Provincial Universities* require candidates for science degrees, which are granted as a rule in pure and applied science, to Matriculate after passing the University Entrance examination in similar subjects to those of the London University. Then the student attends an approved course of study for three years subsequent to Matriculation, and passes the Intermediate and Final examinations in the subjects of the curriculum. Full particulars in respect of the curriculum and the examinations will be found in the Calendars of the various Universities.

For the *Scotch Science Degrees* candidates pass a Preliminary examination in English, another language, mathe-

matics, and dynamics or a third language. Then they enter the University whose degree they desire, for seven courses of instruction during three academical years. They need only take four of the seven courses at the particular University; the other three may be taken elsewhere. For example, in Edinburgh the student may take three courses in Heriot-Watt College, and in Glasgow three courses at Anderson's College.

Other Branches of Science.

Facilities for scientific study have increased enormously of late years, and the branches of agriculture and engineering now occupy an important position in the instruction given by many institutions. Instruction in special branches, such as tinctorial chemistry or dyeing, can be obtained in the manufacturing districts. Brief notes are appended on the various

Colleges and Institutions.

Complete courses of instruction are given either in day and evening classes, or frequently in both.

LONDON.

† **BATTERSEA POLYTECHNIC**, Battersea Park Road, S.W.—The feature is the evening courses (day courses are also provided) in chemistry, botany, and technological subjects. Fees, 10s. to 15s. each class; day course, 3l. to 4l. Secretary, Mr. J. J. Harwood.

† **BIRKBECK COLLEGE**, Bream's Buildings, Chancery Lane, E.C.—Degree course for B.Sc. Fees: Day, 17l. 10s. per session; evening, 10l. complete course. Evening classes in science subjects for Minor. Secretary, Mr. H. Wells Eames.

* **CITY AND GUILDS CENTRAL TECHNICAL COLLEGE**, Exhibition Road, S.W.—Diploma courses of three years in civil and mechanical engineering, electrical engineering, and chemistry. Fees, 36l. per session. Registrar, Mr. J. Jones.

† **CITY OF LONDON COLLEGE**, White Street, Moorfields, E.C.—Evening courses in chemistry, botany, and physics. Fees, 10s. to 30s. for non-members; Minor chemistry course: fee, non-members, 30s. Secretary, Mr. David Savage.

* **EAST LONDON COLLEGE**, Mile End Road, E.—Evening University courses in science for Intermediate and Final pass B.Sc., 5l. 5s.; full-day course, 10l. 10s. Registrar, Mr. T. C. Hodson.

† **GOLDSMITHS' COLLEGE**, New Cross, S.E.—Science instruction in evening classes. Fee, 5s. to 15s. Warden, Mr. W. Loring, M.A.

* **KING'S COLLEGE**, Strand, W.C.—Composition-fees in science faculty, 50l. 8s. per annum. Secretary, Mr. Walter Smith.

† **NORTHERN POLYTECHNIC INSTITUTE**, Holloway, N.—Degree courses, fee 6l. 6s. to 15l. 15s. per session for day course; evening classes in science, fee 5s. to 50s. each subject. Secretary, Mr. W. M. Macbeth.

* **ROYAL COLLEGE OF SCIENCE**, Exhibition Road, S.W.—Degree courses in science and engineering. Associateship granted to successful students after three years' course. Sessional fees, 16l. to 41l. Registrar, Mr. F. Fladgate.

* **ROYAL HOLLOWAY COLLEGE**, Englefield Green, Surrey.—Residential college for women students. Degree courses in science. Fee, 37l. 6s. 8d., or, without residence, 12l.

† **SIR JOHN CASS TECHNICAL INSTITUTE**, Jewry Street, Aldgate, E.C.—Evening classes in chemistry, physics, and special subjects. Fee, 4s. to 10s. per session for each class. B.Sc. course provided. Secretary, Mr. W. H. Davison, M.A.

† **SOUTH-WESTERN POLYTECHNIC**, Manresa Road, Chelsea, S.W.—Courses in chemistry, botany, and materia medica for the Minor cost 2l. per session; day course (B.Sc., etc.), 15l. per session. Secretary, Mr. H. B. Harper.

† **TECHNICAL COLLEGE**, Leonard Street, Finsbury, E.C.—As in Central Technical College, but shorter. Fees, 20l. per session. Registrar, Mr. K. Dove.

* **UNIVERSITY COLLEGE, LONDON**, Gower Street, W.C.—Fees for B.Sc. course, including chemistry, 110l. Secretary, Mr. W. W. Seton, M.A.

WANDSWORTH TECHNICAL INSTITUTE, High Street, Wandsworth, S.W.—Evening classes in chemistry, botany, and physics suitable for pharmaceutical students. Fee, 7s. 6d. to 15s. per subject (including practical work).

† **WEST HAM TECHNICAL INSTITUTE**, Romford Road, E.—Lectures and laboratory work in Minor subjects are given. Fee, 42s. Day courses in science, fee 10l. 10s. to 12l. 12s. per session. Principal, Mr. A. F. Hogg, M.A.

† **WOOLWICH POLYTECHNIC**, Lower Market Street, Woolwich.—Instruction is given in chemistry and physics. Fees, 5s. to 40s. per session. Principal, Mr. W. Gannon, M.A.

* Schools of the University of London.

† Institutions having teachers recognised by the University of London.

PROVINCES.

ABERDEEN.—*University*.—Degree courses in Science. Fees, 2l. 2s. to 4l. each subject in the summer or winter sessions.

ABERYSTWYTH.—*University College of Wales*.—Fee for the science course, 10l. per session, exclusive of practical work.

BANGOR.—*University College of North Wales*.—Inclusive fee as at Aberystwyth.

BARROW-IN-FURNESS.—*Technical Schools, Abbey Road*.—Evening classes in chemistry and physics. Fee, 7s. 6d. to 15s. per session.

BELFAST.—*Queen's College*.—Courses for the R.U.I. and London science degrees. Class fees usually 1l. to 2l., except practical chemistry, 3l. to 5l. Registrar, Professor J. Symington, M.D., F.R.S.

BIRMINGHAM.—*University*.—B.Sc. degree course in pure science costs about 12l. 12s. to 28l. per year. *Municipal Technical School, Suffolk Street*.—Evening classes in science for pharmacy students.

BRADFORD.—*Municipal Technical College*.—Day and evening courses for science qualification, technological and pharmaceutical subjects. Fees: full-day course, 13l.; evening course, 10s. per session.

BRIGHTON.—*Municipal School of Science and Technology*.—Day courses for London University examinations. Fee, 5l. 5s. per term.

BRISTOL.—*University College*.—Science courses for the London University examinations. Composition fee, 14l. 14s. Evening lectures in chemistry and botany; fees, 10s. per session. *Merchant Venturers' Technical College*.—Evening classes in science. Fee, 5s. to 10s. each subject.

CARDIFF.—*University College of South Wales and Monmouthshire*.—Classes are given in science subjects.

CORK.—*Queen's College*.—Courses and fees as at Belfast. Registrar, Mr. Alexander Jack, M.A.

DERBY.—*Technical College*.—Day courses of instruction and evening classes in science. Fees: day course, 10l. 10s. per session; single class, 10s. 6d. per term. Evening courses, 10s. 6d. to 1l. 1s. per year.

DUBLIN.—*Royal College of Science*.—Three-years' course for A.R.C.Sc.I. Registrar, Mr. P. A. E. Dowling.

DUNDEE.—*University College*.—Botany, chemistry, and physics are taught in day classes in winter or summer sessions. Fees, 1l. 11s. 6d. to 4l. for each session.

EDINBURGH.—*Heriot-Watt College, Chambers Street*.—Efficient science courses are arranged in day and evening classes. Fees: evening session, 5s. to 20s. each subject. Day courses, composition fee, 12l. 12s. to 15l. 15s. per session. Principal, Dr. A. P. Laurie.

GLASGOW.—*Technical College*.—Day and evening classes in chemistry, applied chemistry, mechanical and electrical engineering, etc. *University of Glasgow*.—Degree courses in science, including pharmacy. Class fees in science subjects, 2l. 2s. to 4l. 4s. per session. Fees for practical work higher.

HALIFAX.—*Municipal Technical College, Hopwood Lane*.—Science and technological courses. Fees for evening classes, 5s. to 10s. per subject, or 21s. per course. Day courses, 21s. per subject.

HUDDERSFIELD.—*Technical College*.—Full-day courses and evening classes are held in science and technological subjects. Evening science courses. Fee, 10s. 6d. per session.

LANCASTER.—*The Storey Institute*.—Evening classes in science. Fee, 4s. to 7s. 6d. per subject. Principal, Mr. Wm. French, M.A., F.I.C.

LEEDS.—*University*.—*Central Technical School, Cookridge Street*.—Evening courses in pure and technical chemistry. Sessional fee, usually 7s. 6d. The instruction is adapted to the University degrees and diplomas in science.

LIVERPOOL.—*University*.—Course for degrees in science or special purposes.

MANCHESTER.—*University*.—Pharmaceutical course for science degree. Winter session fee, 15l. 15s.; full year's course, 19l. 19s. The *School of Technology* also gives sound education in science (Principal, Professor Pope, F.R.S.).

NEWCASTLE-UPON-TYNE.—*Armstrong College*.—Fees for curriculum of B.Sc. Durham, 60l. Day and evening classes are held. Secretary, Mr. F. H. Pruen.

NOTTINGHAM.—*University College*.—Day science courses. Evening classes in chemistry, physics, and botany. Fee, 5s. to 10s. per subject. Registrar, Mr. P. H. Stevenson.

PLYMOUTH.—*Municipal Science, Art, and Technical Schools*.

READING.—*University College*.—Day and evening classes in science subjects. Evening class. Fee, 5s. to 10s. each.

ST. ANDREWS.—*University*.—B.Sc. degree costs about 39l. to 50l. for University and college fees.

SHEFFIELD.—*University*.—Degree courses in science and evening classes at low fees. Registrar, Mr. W. M. Gibbons.

SOUTHAMPTON.—*Hartley University College*.—Composition fee for B.Sc. courses, 15l. 15s. per session. Evening classes in science subjects at low fees. Principal, Dr. S. W. Richardson.

SWANSEA.—*Technical College*.—Day and evening classes in chemistry, physics, and botany. Fees: evening classes lectures, 5s.; practical work, 10s. per subject.

Diplomas in Optics.

Sight-testing and spectacle-fitting are now taken up very largely by chemists and druggists, and many have obtained the diplomas of the Spectacle-makers' Company or the British Optical Association. These diplomas are obtained as the result of examination, and the course of study necessary is of great value educationally. The diplomas have no legal status, but attempts have been made to promote a Sight-testing Opticians Bill, which will probably be renewed when a favourable occasion presents itself.

THE SPECTACLE-MAKERS' COMPANY, 11 Temple House, Temple Avenue, London, E.C., hold examinations twice a year in London or the provinces. The diploma scheme was founded in 1898, and has been several times revised. A new syllabus was issued in April of this year, and is given in full in "The Chemist-Optician" (4s., office of THE CHEMIST AND DRUGGIST). The following embodies the main features of the syllabus. There are three examinations: (1) The Preliminary examination, consisting of five sections:

- (a) A written examination in elementary mathematics and in arithmetic.
 - (b) A *viva-voce* examination in general optics, practical optics, and frame-adjusting.
 - (c) A written examination in general optics, practical optics, and frame-adjusting.
 - (d) A practical examination in the optical analysis of lenses and in lens-setting.
 - (e) A practical examination in frame adjustments and measurements and in optical prescriptions.
- (2) Final examination in visual optics and sight-testing, consisting of three sections:

- (f) A *viva-voce* examination in visual optics.
 - (g) A written examination in visual optics.
 - (h) A practical examination in the adaptation of lenses to correct errors of vision.
- (3) Final examination in advanced optics and scientific instruments, consisting of four sections:
- (i) A *viva-voce* examination in the principles of optical and meteorological instruments.
 - (j) A written examination in advanced optics and the optics of instruments.
 - (k) A practical demonstration of the adjustment and use of optical and meteorological instruments, and when honours are taken
 - (l) A written and practical examination on a special syllabus.

The last-named syllabus deals with advanced optical knowledge, and requires a knowledge of three of the following subjects: (1) Camera, (2) optical lantern, (3) microscope, (4) telescope, (5) stereoscope and range-finder, (6) sextant, (7) theodolite, (8) polariscope, (9) spectroscopy and spectrometer.

The books recommended in the syllabus are as follows:

Section a. Consterdine and Barnes' "Practical Mathematics."

Sections b, c, d, e. Laurance's "General and Practical Optics"; Glazebrook's "Light"; Thompson's "Optical Tables and Data"; and Taylor's "Frame Fitting."

Sections f, g, h. Laurance's "The Eye"; Hartridge's "Refraction"; Taylor's "Key to Sight and Testing."

Sections i, j, k, l. Johnson's "Optical Instruments"; Glazebrook's "Heat and Light"; Percival's "Optics"; Ganot's "Physics."

Other books recommended are:

Glazebrook's "Practical Physics"; Johnson's "Photographic Optics"; Gage's "The Microscope"; Maddox's "Ophthalmological Prisms."

Further particulars of the examination can be obtained from the Clerk of the Company, Colonel T. Davies Sewell, F.R.A.S., 11 Temple House, London, E.C.

THE BRITISH OPTICAL ASSOCIATION (Incorporated 1895), 199 Piccadilly, London, W., was the first to start an optical examination scheme. There are two grades of examination, membership (dioptric grade) and fellowship, and these are held twice yearly in London (May and November), or in the provincial centres when a sufficient number of candidates desire it.

Candidates for the dioptric grade are required to produce a Preliminary certificate from an approved examining body. (The list of approved examining bodies is similar to that of the Pharmaceutical Society of Great Britain.)

The examination is practical and theoretical, and by a recent decision of the Council the theoretical part can be taken separately and in advance of the practical work, although no certificate is given until the practical examination is passed. The subjects in which the candidate is examined are lenses, frames, subjective sight-testing, dissection, physical optics, physiologic optics, anatomy and physiology of the eye, phorometry, and ethics.

For the Fellowship examination candidates must hold the dioptric certificate, and are examined in similar subjects as before, but a deeper knowledge is required, and prismetry, ophthalmoscopy, embryology, and microscopical demonstrations are included.

The examination fees are: Dioptric grade 3*l.* 3*s.*, fellowship 5*l.* 5*s.* Qualified chemists of Great Britain and Ireland are exempt from portions of the dioptric grade examination.

Further information can be had from the Secretary, Mr. J. H. Sutcliffe, F.R.S.L., 199 Piccadilly, London, W.

Although not a qualifying body, mention can appropriately be made here of the SOCIETY OF CHEMIST-OPTICIANS (Hon. Secretary, Mr. J. Harcombe Cuff, 25 Friern Barnet Road, New Southgate, London, N.), which was formed in 1904 to look after the interests of chemist-opticians, and has done useful work. The President is Mr. John Gibson, F.C.S., chemist and druggist, Hexham. The subscription to the Society is 7*s.* 6*d.* per annum, and the grades are members, associates, and assistants.

THE INSTITUTE OF OPHTHALMIC OPTICIANS, founded in 1905, is an association of diploma-holders of the Spectacle-makers' Company. There are two grades—fellows and associates—the subscriptions being 1*l.* 1*s.* and 10*s.* 6*d.* respectively. Mr. J. Harcombe Cuff, 25 Friern Barnet Road, New Southgate, London, N., is the Hon. Secretary.

There are several optical societies in the provinces to which chemists belong, notably the Manchester and North of England Optical Society, of which many of the officers are chemists.

Optical Instruction.

THE BRITISH OPTICAL INSTITUTE, Mount Edgcombe Gardens, Clapham Road, London, S.W., conducted by Mr. F. Gordon Huntley, prepares students for the examinations of the British Optical Association and the Spectacle-makers' Company. The teaching staff includes a qualified ophthalmic surgeon, and the courses of instruction are conducted practically and by correspondence. The student is recommended to begin with a postal course, and supplement this by personal attendance at the Institute when the theory is well understood. A refraction clinic for the poor is carried on at which students obtain practice in sight-testing. The fees for the four courses of the dioptric grade amount to 25 guineas; for the fellowship grade 22 guineas. The classes are held during the day and in the evening.

MR. A. E. GREY, 13 Spencer Street, Clerkenwell, London, E.C., receives pupils for the practical work and sight-testing part of the Spectacle-makers' Company's syllabus.

HIGHBURY NEW PARK COLLEGE, N.—Principal, Mr. W. F. Wyndham-Smith. Courses are conducted for the examinations of the Spectacle-makers' Company, the fees being: Preliminary 5*l.* 5*s.*, Final 4*l.* 4*s.*, Sight-testing 3*l.* 3*s.* The composition-fee is 10*l.* 10*s.* till qualified.

MR. J. C. KIDD, 551 Cheetham Hill, Manchester, specialises in optical instruction for the examinations of either of the examining bodies.

MR. LIONEL LAURANCE, Orthos House, 21 John Street, Bedford Row, London, W.C., conducts courses of instruction in preparation for the examinations of the Spectacle-makers' Company. The tuition is both in class and by correspondence. The fees for the Preliminary examination (excepting the mathematical portion) are 5*l.* 5*s.*, for mathematics and arithmetic 1*l.* 1*s.*, for the Final examination 5*l.* 5*s.* A special reduction in fees is made to members of the Society of Chemist-Opticians.

LONDON SCHOOL OF OPTICS, 47 Hatton Garden, London, E.C.—This school, carried on in connection with the Anglo-American Optical Co., provides instruction in general refraction and sight-testing, both in class and by correspondence. The fees for either the personal course or for personal course and correspondence classes combined are 3*l.* 3*s.* Further particulars can be had by addressing the Secretary.

THE NORTHAMPTON INSTITUTE, Clerkenwell, London, E.C. The courses in optics are now held in the British Horological Institute in Northampton Square. The full course of technical optics occupies two years, and consists of lectures, laboratory work, drawing-office work, tutorial classes, and workshop practice. As the work develops, third year's courses will be established. The winter term begins on October 3. The fees are 15*l.* per session (October to July). Partial courses (two afternoons a week) may also be taken, for which the fee is 3*l.* per session, and there are evening classes suitable for chemists in business who cannot leave during the day. The whole field of optics is covered both

theoretically and practically. The prospectus of the optical department can be had by applying to Dr. R. Mullineux Walmsley, the Principal.

THE SCOTTISH OPTICAL COLLEGE, 4 Newton Street, Charing Cross, Glasgow.—Founded 1905. Tuition is given in day, afternoon, and evening classes, and instruction by correspondence can also be had. The fees for a full course are 4*l.* 4*s.*, for the short course 3*l.* 3*s.* The short course is partly practical and partly conducted by correspondence. Classes are held in Edinburgh when sufficient applications are received.

Scholarships and Prizes.

The following particulars of various scholarships and prizes are sufficient to enable the student of pharmacy to see the scope of the competitions which are open to him. It will be seen that while some are open to all students others are strictly limited in scope. When further particulars are desired application should be made to the persons mentioned in the paragraphs.

JACOB BELL SCHOLARSHIP.—The Pharmaceutical Society of Great Britain offers annually two scholarships, each comprising free education at the School of Pharmacy, 25*l.* in cash, and books to the value of 2*l.* 10*s.* Free admission to the advanced course is also conceded. The scholarships are open only to student-associates of the Society not less than twenty or more than twenty-two years of age, who have been engaged for not less than three years in the pharmacy (*i.e.*, open shop) of a pharmaceutical chemist or a chemist and druggist. The examination is held on the third Tuesday in June, at London, Edinburgh, and Manchester. Application for admission must be made on or before June 1 to Mr. Richard Bremridge, 17 Bloomsbury Square, London, W.C. The subjects of the examination are:

Latin.—Translation of "unseen" passages. Latin into English, English into Latin.

French or German.—Translation of "unseen" passages. French or German into English, English into French or German.

Chemistry, Pharmacy, and Botany.—A three hours' paper dealing with these subjects in their relation to the British Pharmacopoeia. The questions will be based upon an elementary knowledge of the principal chemicals, drugs, and processes of the British Pharmacopoeia such as a student may reasonably be expected to have acquired during apprenticeship.

MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP.—This is of the annual value of 26*l.*, which is spent in paying school-fees. The conditions of entry and competition are similar to those of the Bell Scholarship, except that the competitors must not be less than nineteen years or more than twenty-one years of age, and they must be student-associates of the Society who have been engaged not less than three years in the pharmacy of a pharmaceutical chemist or chemist and druggist in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. The winner of this scholarship may study in any provincial school of pharmacy or in the Society's school. The scholarship often goes abegging.

FAIRCHILD SCHOLARSHIP AND PRIZES.—This scholarship of 50*l.* and four prizes of 5*l.* each are offered annually by Messrs. Fairchild Bros. & Foster, London and New York, and is conducted by a Committee of Trustees. The competition, which is very popular, is open to any registered student of pharmacy in Great Britain or Ireland who has fulfilled the conditions for entering the Minor or Licence examination, and is between twenty and twenty-two years of age. The examination is in elementary chemistry, elementary materia medica, practical pharmacy and prescription-reading, and elementary business knowledge. The examination is in writing, and is held in Cardiff, Dublin, Edinburgh, London, and Manchester in June. Candidates may go to any centre nearest to where they reside. The candidate who gets the highest aggregate number of marks is awarded the scholarship, and the money is devoted to paying for a course of instruction not less than three months for the Minor examination (G.B.) or the Licence examination in Ireland. Any money not used to pay fees is paid to the scholar for maintenance. The prizes of 5*l.* go to each of the four countries, each being awarded to the best student whose registration address is in England, Wales, Scotland, or Ireland. The questions set in this year's examination were printed in the *C. & D.*, July 4, p. 14. For the results see the *C. & D.*, August 1, p. 187. A syllabus of the examination can be obtained from Mr. A. E. Holden, Secretary of the Committee of Trustees, Bath House, Holborn Viaduct, London, E.C., with whom entries must be made for the next examination before June 1, 1909.

HERBARIUM PRIZE.—The Pharmaceutical Society of Great

Britain offers to its student-associates the choice of medals and certificates for a herbarium of British plants collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between January 1 in one year and July 1 in the year following. The collection must not exceed 150 specimens, which must be selected and mounted to display the characteristic features of the more prominent and typical genera of the chief British natural orders. Particulars can be obtained from Mr. Bremridge, 17 Bloomsbury Square, London, W.C.

"CORNER FOR STUDENTS" PRIZES.—For the purpose of enabling students of pharmacy to test their progress in chemical analysis *THE CHEMIST AND DRUGGIST* offers monthly two book prizes for qualitative chemical analysis. The competition was founded in 1868, and maintains its popularity. Throughout the winter session a tournament is conducted, the marks each month being registered, and the three competitors who receive the highest number of marks are awarded parchment certificates and book prizes to the value of 2*l.* 2*s.*, 1*l.* 1*s.*, and 10*s.* 6*d.* Prizes are also awarded to any students whom the conductor of the "Corner," Dr. Leonard Dobbin, judges to have made meritorious progress.

THE ABERDEEN PHARMACEUTICAL ASSOCIATION offers to local apprentices a scholarship for attendance at the pharmaceutical classes at Robert Gordon College, particulars of which may be had on application to the Secretary of the Association.

BOWMAN PRIZES.—The Leeds Chemists' Association offer annually six book prizes to the aggregate value of 10*l.*, presented by Mr. W. P. Bowman. There are two sets of questions for juniors and seniors in chemistry and pharmacy. The syllabus is obtainable from Mr. J. R. Bentley, Hon. Secretary, 85 Kirkgate, Leeds, to whom entries must be made before March 1.

THE EDINBURGH ASSISTANTS' ASSOCIATION offers several prizes for competition among its members only, including a ticket for attendance at chemistry classes and prizes for botany.

MUTER SCHOLARSHIP.—This scholarship entitles the holder to free tuition in the South London School of Pharmacy, 325 Kennington Road, London, S.E., and is offered for competition in September each year. For printed particulars apply to the Secretary of the school.

Post-graduate Prizes.

The Pharmaceutical Society of Great Britain offers annually three prizes consisting of medals for competition by pharmaceutical chemists who have passed the Major examination during the year. The examination is in materia medica, botany, and chemistry, and is held in April. The Registrar communicates with each person entitled to compete advising him of the matter. The first prize is the *Pereira Silver Medal* and 5*l.* worth of books; second, the *Society's Silver Medal*; and third, the *Society's Bronze Medal*.

The Society has also in its gift the *Redwood Research Scholarship* of the value of about 60*l.* in cash, which is awarded every second year to a pharmaceutical chemist and enables him to work in the Society's research laboratory.

The *Burroughs Scholarship* of 60*l.* is a similar award every second year.

The *Salters' Research Fellowship* in chemistry of the annual value of 100*l.* is awarded for a similar purpose.

The Council of the *Pharmaceutical Society of Ireland* award annually a gold and silver medal to pharmaceutical chemists who have during the year passed the Licence examination and obtained the following standards of marks: for the gold medal not less than 240 marks out of 300, and sixty-five in each of the three subjects; for the silver medal 230 marks out of 300, and sixty in each of the three subjects.

The *Kinninmont Prize*, awarded annually, is open to pharmacy students residing in Glasgow and the West of Scotland who have passed the Minor at any time from April two years preceding the date of examination. An examination is held in Glasgow in May. The Hon. Secretary is Mr. W. L. Currie, 223 Byres Road, Dowanhill, Glasgow.

APPOINTMENTS.

DISPENSERS under the Metropolitan Asylums Board receive salaries of 100*l.* a year, rising by 5*l.* annually to 130*l.*, with dinner and tea daily.

PRISON DISPENSERSHIPS are open to chemists and druggists between twenty-four and thirty years of age. It is necessary to join as a warder and wear uniform. Residence is provided, and the salary is from 105*l.* to 140*l.* a year.

ARMY COMPOUNDERS are non-commissioned officers in the Royal Army Medical Corps, who pass examinations in pharmacy, materia medica, posology, and similar subjects conducted by the medical officers. It is necessary to enlist in the corps, and work up to the position which entitles a man to enter for the examination. As "qualified military dispensers" Army compounders are referred to in the Poisons and Pharmacy Bill.

POOR-LAW DISPENSERSHIPS for Unions under the Local Government Board of England are open to those who hold certificates as Licentiate of the Society of Apothecaries, London; apothecaries' assistants (under the English Act); Army compounders; chemists and druggists (G.B.), or pharmaceutical chemists (Ireland). Salaries begin at 120*l.*, and can be increased by 20*l.* after four years, and then by biennial increments of 10*l.* until a maximum of 180*l.* a year is reached in the metropolitan area. In the provinces there is no fixed limit, the salary being fixed and varied by the Guardians of each Union, with the sanction of the Local Government Board. Dispensers receive pensions on retirement through age or ill-health, a deduction from the salaries being made in respect to this arrangement.

DISPENSERS IN NAVAL HOSPITALS.—There are nineteen of these berths at home and abroad. Candidates for vacancies (which are advertised as they occur) must be chemists and druggists or pharmaceutical chemists, and not less than twenty-one or more than twenty-eight years old. Entry into the Service is by examination, conducted by the Civil Service Commissioners, but the candidates are first selected by the Medical Department of the Navy, 18 Victoria Street, S.W., to the Director-General of which Department applications respecting vacancies and nominations should be addressed. The pay is 110*l.* a year to begin with, and rises by 5*l.* every two years to 130*l.*, and then by 10*l.* every two years to 230*l.* Additional allowances of from 20*l.* to 40*l.* a year are made to dispensers in charge of stores; 20*l.* is also allowed to the dispenser instructing the Sick-berth Staff at Haslar. Free quarters are provided, and allowances made to those serving on foreign stations to meet the increased cost of living. Pensions are granted on retiring.

The following appointments are obtainable by chemists, and some are held by pharmacists who have specialised in certain directions. The pharmaceutical training is a valuable asset to anyone holding these appointments.

THE ADMIRALTY, Whitehall, S.W., employs several chemists at Portsmouth.

THE METROPOLITAN WATER BOARD, 20 Nottingham Place, London, W., employs several chemists, who need bacteriological experience.

AGRICULTURAL ANALYSTS are appointed by County Councils under the Fertilisers and Feeding-stuffs Act.

THE WAR OFFICE, Whitehall, S.W., employs a number of chemists, who have to pass certain examinations, of which particulars are obtainable from the Civil Service Commission.

GAS ANALYSTS are required to examine the gas supply for public authorities, such as the London County Council, and some gasworks employ chemists to take the analytical control of the manufacture of gas.

THE PATENT OFFICE, Southampton Buildings, London, W.C., appoints examiners of patents, and some of these need to be chemists. Particulars of the examinations are obtainable from the Civil Service Commission, Burlington Gardens, London, W.

CHEMIST IN THE GOVERNMENT LABORATORIES, Clement's Inn Passage, Strand, London, W.C.—Applicants for appointments in the laboratories should apply to the Principal Chemist there, or to the Secretary of the Civil Service Commission, Cannon Row, London, S.W., who will furnish particulars of the examination for the appointments. Salaries vary from 160*l.* to 800*l.*, with pension on retirement.

BOOKS FOR THE STUDENT.

The object of the following notes, written by a pharmacy teacher, is to indicate briefly books that have been found useful by actual experience in the different subjects.

BOTANY.—The beginner cannot do better than commence with J. W. Oliver's (Birmingham) "Elementary Botany" (Blackie), 2*s.* Lowson's "Text-Book of Botany" (Clive), 6*s.* 6*d.*, is a favourite with many pharmacy students, and for the use indicated by the title Scott's "Introduction to Structural Botany" is unequalled—Part I., flowering plants, for the Minor student; Part II., flowerless plants, for the Major

student (Black), 3*s.* 6*d.* each part. The advanced reader will find ample instruction in Green's "Manual of Botany," Vol. I., Morphology and Anatomy, Vol. II., Classification and Physiology (Churchill), 7*s.* 6*d.* and 10*s.*, and Vine's "Students' Text-book of Botany" (Sonnenschein). For classification the junior student will find useful Buckley's "Botanical Tables for the Use of Junior Students" (Macmillan), 1*s.* 6*d.*, or Holmes's "Botanical Note-book" (Christy), 3*s.*; while the best "Handbook of British Flora" for the student is that of Bentham and Hooker (Reeve), 10*s.* Green's "Soluble Ferments and Fermentation" (Cambridge Press), 10*s.* 6*d.*, and "Introduction to Physiology" (Churchill) are classics in the subjects treated.

CHEMISTRY.—With the pharmacy student Attfield's "Chemistry" (Gurney & Jackson), 15*s.*, is undoubtedly most popular, and Newth's "Inorganic Chemistry" (Longmans), 6*s.* 6*d.*, equals it in popularity with the beginner in chemistry only. For organic chemistry Perkin and Kipping's "Organic Chemistry" (Chambers), 6*s.* 6*d.*, is usually the starting-point, and Bloxam's "Chemistry: Inorganic and Organic" combine the two in a useful form for the advanced student. Berntsen's "Organic Chemistry" (Blackie), 7*s.* 6*d.*, Cohen's "Theoretical Organic Chemistry," and "Practical Organic Chemistry for Advanced Students" (Macmillan), 6*s.* and 3*s.* 6*d.*, are all good books on their subjects, the last named being particularly useful for practice in the preparation of organic substances. Richter's "Chemistry of the Carbon Compounds" (Kegan Paul), Vol. I., Aliphatic Series, 14*s.*, Vol. II., Hetero- and Carbo-cyclic Series, 15*s.*, is a standard reference work on organic compounds. Walker's "Introduction to Physical Chemistry" (Macmillan), 10*s.*, is easily understood, and gives students a good grasp of that subject.

ANALYTICAL CHEMISTRY.—The books on qualitative analysis are exceedingly numerous, each institution favouring its own or some other manual of analysis. Muter's "Analytical Chemistry" (Baillière), 6*s.* 6*d.*, is clear and concise, and is favoured by many pharmaceutical workers. Newth's "Practical Chemistry" (Longmans), 2*s.* 6*d.*, and Perkin's "Qualitative Analysis" (Longmans), 3*s.* 6*d.*, are also good treatises on qualitative testing. For organic qualitative work Weston's "Scheme for the Detection of the more Common Classes of Carbon Compounds" (Longmans), 2*s.*, is unique and eminently practical. The student wanting a book on quantitative analysis is advised to invest in Clowes and Coleman's "Quantitative Chemical Analysis" (Churchill), 10*s.* Proctor's "Pharmaceutical Testing" (C. & D. office), 2*s.* 6*d.*, and "Practical Methods of Urine-analysis" (C. & D. office), 2*s.* 6*d.*, are specially written for the chemist and druggist, and give easy and accurate methods of testing drugs and urine.

PHYSICS.—Ganot's "Physics" (Macmillan), 15*s.*, includes the various branches under this heading, but is rather beyond the beginner, for whom Glazebrook's "Heat and Light" (Cambridge Press), Professor S. P. Thompson's "Electricity and Magnetism" (Macmillan), 4*s.* 6*d.*, are more adapted. Edser's "Heat for Advanced Students" (Macmillan), 4*s.* 6*d.*, Stewart's "Light" and "Heat" (Clive), 4*s.* 6*d.* and 6*s.* 6*d.* respectively, and Poyser's "Advanced Magnetism and Electricity" (Longmans), 4*s.* 6*d.*, are recommended by some teachers.

MATERIA MEDICA.—The book for the beginner is Greenish's "Introduction to Materia Medica" (Churchill), 15*s.*, the illustrations and simplicity of monographs on the drugs repaying quickly the initial outlay. See also White's "Pharmacopœia" (below). Southall's "Organic Materia Medica" (Churchill), 4*s.* 6*d.*, has been the student's companion for many years, and Humphrey's "Materia Medica" (Kimpton), 6*s.* 6*d.*, gives plenty of information for the price. Flückiger and Hanbury's "Pharmacographia" (Macmillan), 21*s.*, is of historical value only. For practical microscopical work Greenish's "Microscopic Examination of Food and Drugs" (Churchill), 10*s.* 6*d.*, is the only English work of its kind for the pharmacy student. For more information on staining methods Squire's "Methods and Formulae" (Churchill), 3*s.* 6*d.*, is useful. The book on the microscope is Carpenter's "Microscope and its Revelations" (Churchill), 2*s.*

PHARMACY.—The student should invest in the British Pharmacopœia, 1898 (Spottiswoode), 10*s.* 6*d.*, an invaluable aid to the study of which is White and Humphrey's "Pharmacopœia" (Kimpton), 10*s.*, giving additional information on materia medica and the chemistry and manufacture of the pharmacopœial substances. For explanation of the pharmaceutical processes the student should consult Lucas's "Practical Pharmacy" (Churchill), 12*s.* 6*d.*, while his guide to dispensing should be "The Art of Dispensing" (C. & D. office), 3*s.* 6*d.*

LATIN AND PRESCRIPTION-READING.—Ince's "Latin Grammar of Pharmacy" (Baillière), 5*s.*, has stood the test of time, and Bennett's newer book, "Medical and Pharmaceutical Latin for Students of Pharmacy and Medicine" (Churchill), 6*s.*, has many points of recommendation.

OTHER BOOKS.—Dobbin's "Arithmetical Exercises in Chemistry" (Thin), 1*s.*, should be obtained by the student

weak in calculations. Martindale's "Extra Pharmacopœia" (Lewis), 10s. 6d., and Squire's "Companion" and "Pocket Companion" to the British Pharmacopœia (Churchill), 12s. 6d. and 7s. 6d., are worth their place for reference in the students' library. For doses "The C. & D. Dose Tables for Pharmacy Students" (C. & D. office), 3d., should be found in the vest-pocket of the student to enlarge his knowledge of posology in his spare moments. Gadd's "Synopsis of the British Pharmacopœia" (Ballière), 1s., is another useful pocket adjunct.

French Pharmacy.

THE "ÉLÈVE."

By D. Squaird.

Of all the Englishmen who take situations as chemists' assistants in France, few find themselves in a truly French pharmacy. Most are employed solely in dispensing English prescriptions and supplying the wants of English people, often in an English pharmacy. Few occupy the place of the ordinary French assistant. It was my good fortune to be one of the few. The old Normandy town in which I was dropped by the packet at 3.30 A.M. on a March morning is chiefly noted for its fisheries, but of late it has been developed as a seaside resort, and now, having a fine casino, it attracts enough English visitors to make an English assistant a desirable acquisition to a pharmacy. Nevertheless, my work was mainly French, and varied at that, so that I got a good insight into the life of the French *élève en pharmacie*. The youth who leaves college at eighteen, or thereabouts, and articles himself to a pharmacien intending to qualify, has set himself a big task. He must, as in England, serve at least three years as apprentice or "élève." The term includes not only the unpaid beginner, but every unqualified assistant. From his first morning until he enters "l'école de pharmacie," no matter his age or experience, he is "Mons. L'élève." At the age of twenty-one his country demands the service of our "élève," and, unless he can squirm out of it on grounds of ill-health or unsuitability, he spends the ensuing three years as a conscript, living at the expense of République Française, which also provides him with tobacco, wine, and—that he may indulge in slight luxuries—pays him $\frac{1}{2}$ d. per diem. At the end of this period he can either take a situation as "élève," or, if funds permit, proceed to "l'école de pharmacie." The course of study extends over three years, and the compulsory examinations are three in number and are held at the end of each school year. The subjects are somewhat more varied than those of the Pharmaceutical Society's examinations. The third examination past he ceases to be an "étudiant" and becomes a "pharmacien." This after at least nine years of unpaid labour! Qualified assistants are rareties in France; what there are of them are paid by the day and are liable to dismissal without notice. The pharmacien's usual course on obtaining his certificate is to buy or start a business for himself. The necessary cash is easily forthcoming in the majority of cases.

With regard to accommodation, the French "élève" of to-day is in very much the same position as the English apprentice of a century ago. Attached to a pharmacy which I have in mind, and partitioned off from it by a 7-ft. wooden screen, is a small room which serves as a consulting-room and telephone-box and is also the store-room for advertising literature. The only part of the window which will open is an oblong frame about 12 ft. by 4 ft. At night this is the "élève's" bedroom. His generous employer has allowed him the luxury of a wash-bowl, but this is most unusual; he must provide his own soap and towel. When he was a youth, the "patron" told me, Mons. L'élève was provided with food and a bed; if he desired to wash there was a fountain at the street-corner.

At 7 A.M. in the summer, and half-an-hour later in the winter, the shop is opened, the task of taking down the heavy shutters being usually the duty of a resident "garçon," or porter. The first meal of the day, "le petit déjeuner," is light—café au lait and bread. After the morning's work "déjeuner," a mixed meal of three or more courses, is a welcome interlude. At 7 P.M. "dîner" is served. It is the meal of the day, and invariably commences with bread soup and concludes with cheese. At 9 or 9.30 the shutters

are put up, and the "élève," according to his disposition, goes to bed, or seeks dissipation outdoors. Until 1906, when a weekly holiday was enforced by law, this was the élève's programme for seven days per week, although generally he was allowed a short afternoon or evening out on Sunday. Now twenty-four consecutive hours of liberty per week must be allowed to every employé. A similar Bill in England would be much appreciated by many of us who know the elasticity of the expression, "Sunday duty shared by mutual arrangement."

The routine of the typical French pharmacy is similar to that of an English one, with one or two exceptions. There are prescriptions to dispense, galenicals to make, specialties to bottle and pack, goods to unpack and customers to serve, but, above all, there are herbs to pack. For herb teas or "tisanes" are the favourite form of medicine for rich and poor alike. Many and strange are the tisanes brewed by the French housewife. Great is the faith with which they are taken. What virtue can there be in a brew of cherry stems, or a decoction of orange leaves? Yet both of these are in constant demand, while mint, thyme flowers, senna leaves and pods, and walnut leaves are sold in large quantities. A large number of these tisanes are official in the "Codex." Most have one ingredient only; some are more complex. Among these latter "fleurs pectorales" and "fruits pectoraux" are rather interesting. Both are cough cures, in great demand with those who either cannot afford or will not trust cough mixtures. "Fleurs pectorales" enjoys the virtue of great cheapness; 2 sous will buy enough to make a litre of the tisane. The flowers of which it is composed are seven in number. The full list has escaped my memory, but I know poppies and violets played a prominent part. "Fruits pectoraux" contains four ingredients, viz. figs, dates, jujubes, and currants, in equal quantities, the larger fruits being cut up moderately small, and the dates stoned. A small quantity of fucus is generally added to make a sort of mucilage. Both these are employed in the manner usual for tisanes; hot water is poured over the mixture, and after standing for about twenty minutes the infusion is strained or decanted, and sweetened to taste. The dose is almost homœopathic. Most of the official tisanes are simpler than these two, but many are of rather unique composition.

In shop routine, and especially in dispensing, one finds the French system differs in many small details from the English. Most of them would sound trivial if described in detail, but often repeated during the day's routine the differences become pronounced. The only way in which they can be fully appreciated is by actual experience, a course which I heartily recommend to the curious. Moreover, in view of the "entente," is it not almost a duty of the tradesmen of one nation to study the methods of those of the other?

THE PHARMACIEN'S EXAMINATIONS.

By A. W. Birnie-Scott.

After passing the Minor examination and getting a few years' experience in London I obtained a situation with one of the best English chemists in Paris. While there I was told that I might as well ask for a "dispense" for the "stage" equivalent to three years' apprenticeship, the three years of study at the School of Pharmacy, and all the intermediary examinations, which the students have every six months during the three years in the school. I was told that I could get the "dispense" by backing up the request with the Minor certificate translated by a sworn translator. I duly obtained the "dispense," which, I might add, is no longer granted. Anyone connected with law, medicine, or pharmacy must now go right through the whole of the examinations, no matter what qualification he may have. It took some four months before I got my "dispense." Two years after I thought I would open a retail shop, so gave up the situation and became a student. I had the four final examinations to pass. The subjects of the first is a qualitative analysis of a mixture of two salts in the practical, and in the oral examination toxicology, physics, and chemistry. I passed the examination some nine years ago, after having worked six months at it. A much greater knowledge is required than for the Minor. Organic chemistry is taken a very long way, and

physics is a wide subject, including electricity and sound (even music), sight, construction of microscopes, telescopes, and many subjects quite outside the usual run of appliances used in pharmacy. Toxicology is not a very large subject, but one is required to explain the method by which small quantities of violent poisons can be recovered from the body after death, and where it is likely to be located, also the analysis of poisonous gases, the French being particularly fond of suicide by burning charcoal. After this first success I had two months before me in which to work for the second, the practical side of which is preparing and staining a microscope section and describing it. They may give you any part of a plant from a dried piece of root to fresh pollen, mixture of starches, pepper (pure or adulterated), rhubarb, bacteria, etc.



MR. A. W. BIRNIE-SCOTT.

The ground to be covered is so great that the examination is difficult, and the oral is worse. It includes botany with recognition of plants. You need to be able to distinguish the best part of 1,000 plants, and to give the Latin name and the family; you must know the whole story of botany from beginning to end, and be able to give the distinguishing characters of at least fifty or sixty of the chief families with their subdivisions, examples, exceptions, etc. The second subject is anatomy and zoology, which also is extensive. You may be asked to explain the action of pricking a part of the body, how the sensation gets to the brain, in which part it goes, and how the brain orders the muscle to work in order to avoid the continuation of the pricking; or you may be asked to follow food from the mouth, through the alimentary canal, the structure of the parts, what they do, and all about food. They may ask you to describe the heart of the crocodile or that of a serpent, or to describe the singing organs of a bird, or the eye of an insect. You cannot learn too much of this subject, but you can learn a lot too little. The third subject was mineralogy and hydrology, with recognition of minerals. You must know where minerals are found, how they are treated industrially. So also with mineral waters. You have to know how to take a sample properly so as to be able to analyse both qualitatively and quantitatively, and how to separate bacteria and to characterise them. The two months I had devoted to the subject proved insufficient, and I got another five months to study before trying it again. In the interval I had to earn something, so I started to deal in drugs and patents. The business began to move after a time, and when the five months were up I had not had a minute to spare for study, and so it continued for several years, when one day two inspectors from the School of Pharmacy dropped in with a "commissaire de police." I told them that I sold to chemists, doctors, and wholesale dealers only. They seized a bottle of P. D. & Co.'s cascara tablets and one of B. W. & Co.'s "tabloid" quinine. These they said were secret remedies, so I was called up by the "juge d'instruction" to explain, which I did, and by the end of six months I was fined 25*l*. I determined to get through the examination, and employed a very good man to take my place in the shop. This was shortly before the fine was inflicted.

About a week after the judgment the same two inspectors with the commissaire gave me another visit and were again going to seize something else, but I explained that I was now working in earnest for the examination and if they would allow me time I should duly qualify. They agreed and have never troubled me since. I may also mention that after the first visit of the two inspectors I received official notice that I could only sell drugs to chemists and to no one else, not even to doctors. After four months' study I passed the practical part of the second examination, but failed in the oral anatomy. I had a holiday and began study

again in October and went in at the beginning of April and passed.

The third examination is a quantitative analysis of some chemical—*e.g.*, a mixture of sugar, the estimation of chlorate of potash in lozenges, mercury in ointment, the various constituents of milk or wine, or the iodine in iodine wool. Also they give you some "Codex" preparation, and you must find out what it is. For these operations you have fifteen minutes to write out how you are going to proceed to do the work; after the fifteen minutes you can use as many books as you like, and, of course, you are not obliged to follow the method you have indicated.

The oral examination is *materia medica* with recognition of specimens, *pharmacie chimique*, and *pharmacie galénique*. One professor questions you on the chemical products in the codex and another on the galénical products. You have also to recognise "Codex" drugs. You are usually shown tinctures, syrups, and extracts; they generally give things that have something to distinguish them. I worked for about ten weeks and went in for the third at the limit time, and was agreeably astonished to pass.

The fourth examination is not a terrible one; no one is ploughed unless he wilfully plays the fool. You have eight preparations to make, which usually take four or five days; then you are questioned as to how you made them, what preparations are similar, in what "Codex" mixtures they enter, impurities, etc. They print for you a number of copies. I duly passed this fourth examination; I did not take any chances, and made the products myself. (Candidates have been known to buy from manufacturers!)

[The document referred to is an eight-page quarto in cover, with the following title:

UNIVERSITÉ DE PARIS.—ÉCOLE SUPÉRIEURE DE
PHARMACIE.
ANNÉE SCOLAIRE 1907-1908. No. 112
SYNTHÈSES
DE
PHARMACIE & DE CHIMIE
présentées et soutenues
le 11 Juillet 1908
Pour obtenir le diplôme de Pharmacien.
PAR
ARTHUR-WILLIAM BIRNIE [SCOTT].*

The exercises set forth and accomplished by the candidate were carbonate de soude pur cristallisé, sulfate (sous) mercurique, tartrate ferrico-potassique, sel de Gregory, pilules de cynoglosse opiacées, résine de scammonée, savon d'huile de coco, and extrait de quinquina calisaya.]

In a short time this fourth examination is to be changed, I am told, and become much more stringent—fewer products will be given to make, but a well-finished article will have to be produced, or the candidate will be ploughed.

I should mention that practically everyone I came in touch with at the School of Pharmacy, including several professors, always had a kind word for me and were most friendly. This sympathy was a considerable moral help to me.

New Books.

These notes do not necessarily exclude subsequent reviews of the works. Any of these books printed in Great Britain can be supplied, at the published price, to readers of this journal on application (with remittance) to the Publisher of "The Chemist and Druggist," 42 Cannon Street, London, E.C.

Armagnat, H. *The Theory, Design, etc., of Induction Coils*. Cr. 8vo. 8*s.* 6*d.* net. (Spon.)

Clarke, E. W. *The Data of Geochemistry* (Bulletin U.S. Geological Survey). 9×5½. Pp. 716. 8*s.* 6*d.* net. (Wesley.)

Clarke, J. H. *Radium as an Internal Remedy*. 7½×4. Pp. 136. 2*s.* 6*d.* net. (Homœopathic Publishing Co., 12 Warwick Lane, London, E.C.)

Mayou, M. S. *Diseases of the Eye*. 7¼×4½. Pp. 400. 5*s.* net. (Frowde.)

Turner, T. *Practical Metallurgy: An Introductory Course*. 8×5. Pp. 112. 3*s.* net. (C. Griffin.)

* Scott is a name I have added legally (to my other names) in England some four years; it has not yet been done in France, but will be done shortly now.

Apprentices and Apprenticeship.

By "Philosoph."

MUCH has been spoken and written recently in regard to the short supply of apprentices in Great Britain and the training which they should get or which some of them have not received. Like some other problems affecting pharmacy, this question is full of difficulties. One thing is clear, however—that if the business of pharmacy is to be continued, it will be necessary that an adequate supply of entrants be forthcoming.

The beginning of the shortage of apprentices synchronised with the discontinuance of their Preliminary examination by the Pharmaceutical Society. The examination was convenient, and probably nine-tenths of those entering the trade sat for it. The time came when it was scarcely in keeping with the general advance in education and the higher standard required in the qualifying examination. It could easily have been stiffened to meet the new conditions. To abandon it altogether was a mistake which caused a wonderful amount of inconvenience to retailers who had been bringing up apprentices.

During the currency of the Society's Preliminary it was an easy matter to put a prospective apprentice on the way to the first examination. Since the change it has not been easy. The difficulty of getting a lad to select the examination he was to attempt has been often greater than that of the examination itself. It requires someone who is intimately acquainted with scholastic matters to explain the character of the various certificates accepted and the best way of proceeding in order to obtain one of them. There is nothing derogatory in saying that the majority of those in the trade could not reasonably be expected to be able to advise with precision in such a matter. It is not too much to say that this difficulty at the start has frightened off 50 per cent. of those who had contemplated entering the ranks of pharmacy, but who had not obtained the requisite certificates of preliminary education before leaving school.

The standard of the Preliminary as it stands is not too high. The arrangements in regard to it are, however, most inconvenient, and convey the impression that they are deliberately designed to give as little facility as possible. The standard of the examination must be based on the quality of the lowest certificate accepted. What sense is there, then, in requiring a pass in all the subjects at not more than two sittings of the same examining authority? For example, a young man may have a second-class certificate in half the subjects from the College of Preceptors, and if it suited him to complete the subjects by passing them in the Arts or Science Preliminary of, say, the University of Edinburgh, would his standard not be considerably higher than if he had obtained the remainder of his certificates in the second class from the College of Preceptors? The limitation is absurd. It is narrow in the extreme. Its removal would broaden and improve the examination. Its existence gives rise to much inconvenience, and, in many cases, real hardship.

It was hoped that the Examination and Education Committee of the Council would, in framing the new Regulations, abolish this bit of red tapeism. They have seen fit to continue it, although, the writer believes, they were advised to the contrary by educational experts. In the face of Mr. Carteighe's statement that "the true test of this certificate was a test of general knowledge in its widest sense," the committee's decision is illogical. The President is reported as having said at the annual meeting that "he did not accept the position that it was any part of the business of the Society to secure apprentices." That may be so. Neither is it any part of the business of the Society to let needless obstacles remain in their way.

The Faculties of Arts, Science, and Medicine take every opportunity of broadening the scope of their entrance examination, and while maintaining the standard they do their utmost to meet the convenience of entrants.

Having got a youth through the first examination, what sort of business is he to enter? There are those who say he should be brought up to dispensing and making galenic preparations, with counter-work in suitable proportion;

others say he should be brought up to "store" methods, where making things is not in fashion, but up-to-date packed goods are handled. Probably if he be to follow the latter class of trade his apprenticeship would be most profitably served with a draper, who for business methods is hard to beat.

Several aspects of the question enter into the youth's calculations. He wants to learn his business; he desires to get some remuneration; and he would prefer short hours to long ones. If it be his intention to follow pharmacy proper, a business in which pharmacopœial preparations are made as well as sold will best suit his purpose. Nothing is so good a training to an apprentice as practice in making things from the book. Specific directions are given in order to obtain the desired result. Unless these directions be followed carefully the result will be disappointing. Working by these directions, in the knowledge that any deviation will be indicated in the product, is a training in attention and exactitude. Dispensing requires to be carefully performed and with accuracy, but it is a comparatively easy and mechanical operation. The prescription orders several ingredients to be made into a pill, powder, or mixture. The dispenser's duty is to put in the correct materials in proper quantities. It does not matter, as a rule, how they are mixed. "Shoot them in and shake them up," is not so very far from the mark in the majority of instances. Skill and knowledge are required from time to time, no doubt, and a dispensing business could not be carried on without someone possessed of both. The root principles of pharmacy are, however, only properly apprehended by those who have had a course of making preparations from the raw material. An apprentice who finds himself in a business where things are made and dispensing bulks largely in the work, should make the most of his opportunities. In such case he need not be particular as to remuneration. Even if he get no salary he will be better off ultimately than with some salary and less beneficial experience. Generally the amount of remuneration is in inverse ratio to the quality of the experience to be gained.

When examination time comes round the candidate who has learnt to make pharmacopœial things as well as to dispense, will find his experience of incalculable service. A very large percentage of those who fail come down in practical pharmacy as distinguished from dispensing. When asked to conduct an operation of the Pharmacopœia, the man who has had no practice promptly shows his inexperience to an observant examiner.

The working hours of chemists are absurdly long. We have reached a stage when something really ought to be done to curtail them. As they are, they are neither good for the status of the business nor for the men who are engaged in it. It is unreasonable to ask a youth to work the hours which are observed in some pharmacies, and it need not excite wonder that he avoids such places.

From the point of view of the employer who is prepared to do his duty by a youth who becomes apprenticed to him, the apprentice is a bit of a nuisance for some time at first. He needs attention to break him in on proper lines, and he wants watching until he acquires habits of caution in procedure. His breakages, which may be reckoned as a certainty, are a worry and a source of periodic strained relations. There are many employers who will not have apprentices. They cannot be bothered with them. These are sometimes owners of a dispensing business where everything is bought ready made. Theirs is a selfish view to take. Probably more such can be found in London than elsewhere. If all were to adopt this policy the race of pharmacists would soon run down to a level which would be sufficient justification for the Government proposals to license unqualified persons to sell poisons under specified conditions. That level has not yet been reached, however, and although pharmacy is not in fashion in the meantime, with careful management it may come into its own sooner than some people predict. It is an interesting occupation, full of variety, free from monotony. Every day brings a change of work and new problems. And the man who devotes his skill, knowledge, and care to the preparation of effective medicines for the cure and relief of human ailments is surely deserving of a high place in the estimation of his fellow-men.

Minor Experiences.

THIS account of the examination at Bloomsbury Square is by a successful candidate who, for this occasion, is X (172/56).
PRACTICAL CHEMISTRY.—On the bench I found the following work waiting:

Estimate the amount of NaOCl in 1 litre of the solution of chlorinated soda, using the thio solution provided, which you must determine for yourself.

The thio solution provided proved to be stronger than decimal, so that owing to taking too small a quantity of iodine for the first titration, a second weighing was necessary. The determination of the sodium hypochlorite was finished ten minutes later. Next I had to find the two substances present in a solution. After nearly two hours I found tartaric acid and citric acid, but was not certain of the latter.

DISPENSING.—Mr. Finemore put me at my ease at once, and gave me a series of prescriptions. One was male-fern extract draught, another called for six tannin suppositories, after which I had to make 200 c.c. of liq. arsenici hydrochlorici; then came a camphor and tar ointment with lard basis, and 30 c.c. of a solution containing atropine sulphate 0.125 per cent. and boric acid 1 per cent.

The oral examination took place ten days later, and I received a notice to attend it, when I was taken through the subjects in the following order:

PHARMACY.—Mr. Goldby asked how I would make liq. calcis, syr. pruni virg., and pil. hyd. subchlor. co. A specimen, which I recognised as hard soap, formed the basis for several questions about soaps and saponification, as well as emulsification—e.g., of turpentine—and I had to explain how oil of turpentine is rectified.

CHEMISTRY.—I had first to tell about the classification of the elements and the periodic system. Then I had to compare phosphorus, arsenium, antimony, and bismuth. Could I suggest another element to include with them? I said nitrogen. What is salicylic acid? How is it made? What is a phenol? This was practically all.

BOTANY. I felt that my fate would be sealed. However, I got away well, recognising four plants and giving the examiner all the orders of several of the scheduled plants. I was then asked to look at a slide, of which I could make neither head nor tail. I was further asked about carbonic-acid gas, where the plant gets it, and this led to absorption, transpiration, assimilation, etc., in all of which I did well, but got awfully mixed up in some questions about ehlrophyll.

MATERIA MEDICA.—The drugs for recognition were belladonna and aconite roots; Virginian prune, hamamelis and elm bark; jaborandi, withe-hazel and henbane leaves; acacia, tragacanth, sandarac, benzoin, and aloes; but some scammonium I mistook for Natal aloes. After defining a balsam and giving constituents of jaborandi-leaves, I was told to go.

LATIN AND POSOLOGY.—I translated three prescriptions into English and one English into Latin, gave doses of plumbi acetatis, zinei oxidum, tr. bellad., acid. arsenios., strychnine, and some six more, and worked out a percentage calculation.

In five minutes I was told that I had passed.

British Pharmaceutical Conference.

THE accommodation reserved for members of the British Pharmaceutical Conference at the headquarters, the Grand Hotel, Aberdeen, has now been fully booked up, so that members applying for rooms should select other hotels.

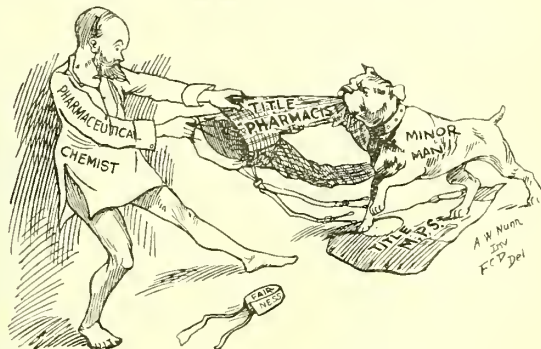
Arrangements have been made with the Aberdeen Steam Navigation Company to convey members of the Conference (on production of their books of tickets for the Conference meeting) to and from Aberdeen at single fares—first cabin, 30s. This reduction is conditional upon there being a party of at least twenty. A steamer leaves the Limehouse Wharf on Saturday, September 12, at 1 o'clock, arriving in Aberdeen thirty-six hours later. The return journey can be made on Saturday, September 19, when the steamer leaves Aberdeen at 6 p.m. Applications should be made to and berths booked with the company's agent, Mr. G. Mutch, the Aberdeen Steam Navigation Company, Limehouse, E.

An announcement regarding tourist tickets on the Highland Railway Company's line appears in our advertisement pages.

The Secretaries of the Conference ask us to state that they will be glad to have the titles of the papers which members are contributing as soon as possible, so that they may be noted in a subsequent number. The Senior Honorary Secretary, who should be communicated with, is Mr. E. Saville Peck, 30 Trumpington Street, Cambridge.

The Week's Poisonings.

THIRTEEN fatalities with poisons have occurred during the week, including two misadventures. Four unscheduled poisons were taken, the remainder causing death being in the second part of the schedule. Mrs. Olive G. Gibbs (39), the wife of a Portsmouth builder, died from heart failure set up by drinking acetic acid in mistake for neuralgia mixture, the containers being of a similar nature. —Annie E. Jordan, the wife of a leather shaver, Bermondsey, said she had taken salts of lemon on the impulse of the moment; she died in consequence a week later. —Mr. A. E. Slade, a Portslade Urban Councillor and tradesman, was found in a collapsed condition in a shop cellar; a bottle close at hand contained a small quantity of spirit of salt. He died the following day. —Catherine Wicks (43), the wife of a Marylebone general dealer, committed suicide by taking spirit of salt. She was out on bail in an assault case. —William H. Stannard (34), waiter, who resided at Millbank, put an end to his life by taking carbolic acid; deceased was worried on account of his wife's illness and the theft of money from his cash-box at the club where he was employed. —Mary Kirk (44), a Warrington widow, committed suicide by taking carbolic acid. —Edward Wilkins (56), upholsterer's assistant, Shirland Road, London, W., took oxalic acid with suicidal intent because of his inability to obtain employment, his age being against him. —George J. Collier (30), a London carman, City Road, also committed suicide by taking oxalic acid for the same reason; he had been out of work for fifteen months and he had six young children. —John Poulton (51), Rotherham, died from an overdose of laudanum taken whilst under the influence of drink. —Mrs. Joseph Pitt, Eastbrook Street, Southport, turning away from her sick husband's bedside, went into an adjoining room and took over two ounces of laudanum and expired during the day; the husband also died on the following day. —John R. Simmonds (28), described as a compounder of medicines, was found dead in a Brighton boarding-house. In a letter he left behind he stated he had taken four ounces of laudanum and apologised for the inconvenience he was causing. Bottles that had contained laudanum and "tubes of morphia and strychnine" were found in his room. His brother said the deceased had not been able to follow his employment on account of hæmorrhage of the lungs. —John Robinson (51), a Barnsley fruiterer, was found dead in a disused quarry. A bottle containing some laudanum was found in one of his pockets, and evidence showed that death was due to opium poisoning. The usual verdict was returned. —W. Turley (55), a Spennymoor labourer, died from an overdose of laudanum, but no evidence was ascertainable whether deceased took the drug to destroy his life or allay pain. Mr. W. H. Snowden, chemist and druggist, 38 High Street, Spennymoor, said deceased obtained sixpennyworth of laudanum from him for rubbing his shoulder.



THE TITLES CLAUSE.

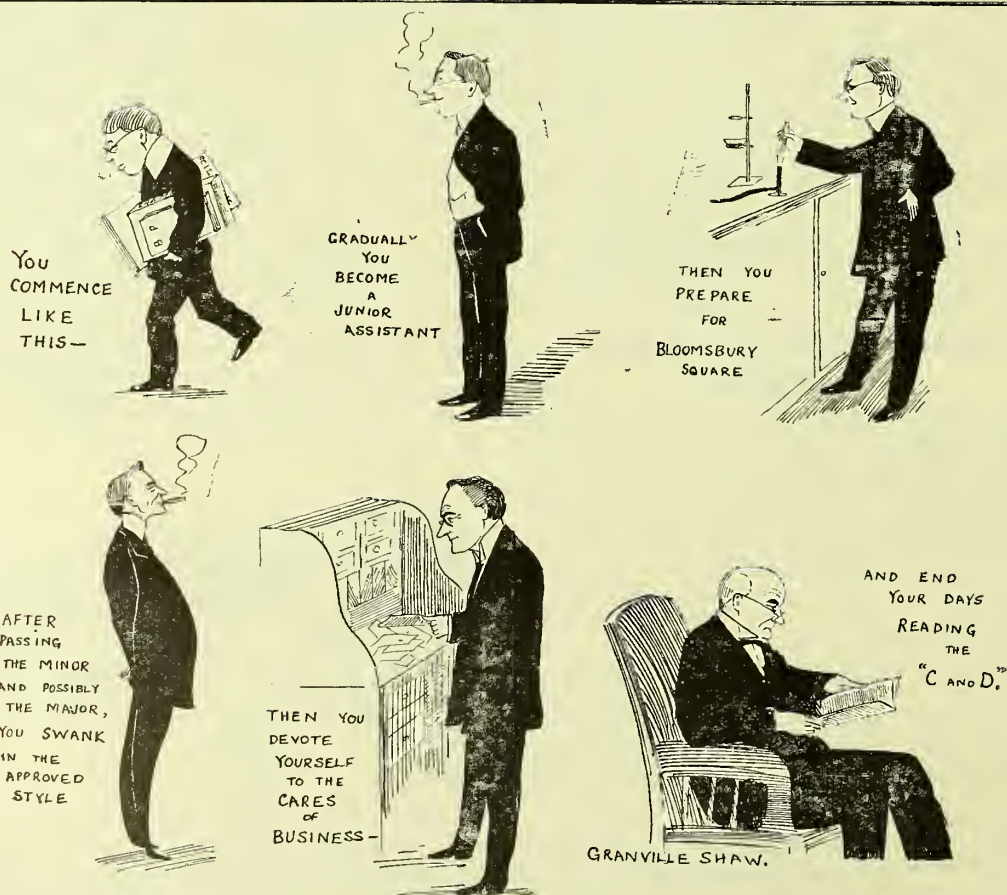
Major Man: "He'll want my shirt next."

A GINSENG MONOPOLY.—The "North China Herald" of July 4 publishes a despatch from its correspondent at Tokio to the effect that the Korean Government have decided to establish a ginseng monopoly.

Citrus By-products.

THE new law relating to citrus by-products in Italy was published in the "Gazzetta Ufficiale" of July 17, and a translation has been forwarded to the Board of Trade by H.M. Consul at Palermo (Mr. S. J. A. Churchill). Those interested may consult the translation in abstract at the Commercial Intelligence Branch of the Board of Trade, 73 Basinghall Street, London, E.C. The following is a summary of its principal features. We may at once state that there is no mention of an export tax of 120 lire or 5*l.* per pipe on juice or citrate, as has been stated in many quarters, but there is a tax of 60c. per quintal or 100 kilos. on all citrus products exported by those who do not join the combination. The new law contains seventeen Articles, the first of which sets out the objects of the Chamber, which are, briefly, to promote the development and regulate the commerce in citrus fruits and products; to supply information as to the conditions of the principal markets; to facilitate direct sales between producers and consumers and seek fresh markets; to issue certificates of analysis showing the percentages of citrate of lime and concentrated juice; to make advances upon the products deposited, etc. The head office is to be at Messina, and is to be constituted by nine councillors, five of whom are to be nominated by the provincial deputations of Palermo, Messina, Catania, Syracuse, and Reggio, in Calabria; they will be selected from the principal producers. The other four are to be selected by the Minister of Agriculture from among the cultivators, under the advice of the issuing banks. The Chamber is to appoint a technical director and staff, the payment of which is to be approved by the Minister of Agriculture. No citrate of lime or juice is in future to

be transported on the railway or for shipment unless accompanied by a certificate of analysis supplied by the Chamber. Those doing business in these products may entrust the sale to the Chamber by depositing the goods in the authorised warehouses, sales taking place in rotation. At the beginning of every annual period of working the Chamber is to establish the minimum selling-prices for the whole season, and the proceeds of sales will be settled with depositors every six months. A sum of 200,000 lire (8,000*l.*) is to be granted to the Chamber in order to make advances on deposit warrants to the extent of two-thirds the value, interest not to exceed 4½ per cent. from the day of advance to the day of sale. The issuing banks are authorised to discount at a favourable rate. When the goods are sold the Chamber is to pass an account for that portion of the value not included in the advance, settlements being made on June 30 and December 31. The Chamber is to charge a fee of 2 per cent., which is to be deducted from the actual amount obtained by the sale, this charge to cover everything, including storage, analyses, stamp-duty, etc. For the products which are not handed to the Chamber for sale the Chamber's fee is settled and collected upon the granting of the certificate of analysis on the basis of the quantity of which the certificate is drawn up, and at a maximum rate of 60c. per 100 kilos., and for each per cent. in grams of free and combined citric acid added together. From the produce of the said fees 20 per cent. is to be deducted and paid into the Banco di Sicilia in account current. The Chamber may be dissolved by Royal decree if found to be unworkable or on account of irregularities in administration. Any dispute is to be settled by arbitration, which is provided for in Article 14. Within two months of the date of its inception the Chamber is to submit its administrative regulations to the Minister of Agriculture for approval.



The Course of True Pharmacy.

Trade Report.

NOTICE TO BUYERS.—The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers stock the goods. Qualities of drugs and oils vary greatly, and higher prices are commanded by selected qualities even in bulk quantities. It would be unreasonable for retail buyers to expect to get small quantities at anything like the prices here quoted.

42 Cannon Street, London, E.C., August 13.

THERE is no material improvement in business to report, but in several quarters there is a more optimistic feeling, which appears to be based on an anticipated revival in the American demand. The heavy chemical markets show few changes beyond a firmer tone in sulphate of ammonia and a slight decline in sodium nitrate. Copper sulphate shows an advancing tendency. Among fine chemicals citrate of iron and quinine has been reduced owing to keen competition, and iron and ammonium citrate has been marked down a penny; potassium citrate is unaltered. Santonin is rather more inquired for, and cocaine is firm, the situation in crude warranting a higher price for hydrochloride. Quinine is stagnant. Among crude drugs interest has centred in the auctions, but on private terms new chamomiles are offered at lower prices, and copaiba and guinea grains are cheaper. Mexican sarsaparilla and Angostura tonka beans are dearer. Japanese vegetable wax has advanced 3s. Menthol is firmer, and cocoa-butter advanced at auction. Peppermint oil is inclined to be firmer. The principal alterations are as follows:

Higher	Firmer	Easier	Lower
Cascara sagrada	Ammonia sulphate	Dragon's- blood	Chamomiles
Cocoa-butter	Buchu	Guinea-grains	Copaiba
Copper	Guaiaacum	Quicksilver	Ferri et ammon. cit.
Sulphate	Menthol	(seconds)	Ferri et quin. cit.
Sarsaparilla	Turpentine	Soda nitrate	Shellac
(Mex.)			
Tonka-beans			
(Angostura)			
Wax, veg.			
(Japan)			

Cablegrams.

SMYRNA, August 13:—Further sales of new opium amounting to 45 cases have been made on American account at the equivalent of 13s. 9d. per lb., being steady.

NEW YORK, August 13:—Business in drugs is seasonable. Opium is easy at \$5.50 per lb. for druggists by case lots. Cascara sagrada has advanced 8c. Hydrastis has advanced to \$2 per lb. for fall-dug, and to \$1.90 for spring. Peppermint oil is nominal at \$1.40 in tins. Central and South American copaiba is easy at 45c. per lb. Serpentry is firm at 47c. per lb., and senega is weak at 40c.

Heavy Chemicals.

At most of the principal centres of the heavy chemical market business continues to be of a quiet nature with little or no change from the position recently depicted. As regards the Tyne centre matters seem to have been somewhat busier, and there has been a better demand, particularly on export account for main products as bleaching powder and caustic soda. Values keep steady and without material fluctuations.

SULPHATE OF AMMONIA.—A still further improvement has taken place in this market and the tone continues firm. This has been partly due to the increased demand and partly to the fact that supplies are somewhat on the low side. Forward inquiries both for this year and into next year have been fairly plentiful, but little has been actually concluded. Present nearest figures are: Beckton, September-December delivery, 11l. 15s. to 11l. 17s. 6d.; Beckton terms, 11l. 5s.; London,

11l. 7s. 6d.; Leith, 11l. 10s. to 11l. 12s. 6d., January-June, 12l.; and Hull, 11l. 5s.

LEAD PRODUCTS are firm and improving. White acetate of lead 23l. to 23l. 10s., and brown acetate of lead 19l. to 19l. 5s., nitrate of lead 24l. to 10s. to 25l. per ton, all less 2½ per cent. Glasgow.

GREEN COPPERAS is in fairly strong request and the firm tone ruling for some time past is well maintained. Best Lancashire makes 45s. to 47s. 6d. per ton f.o.b. Liverpool, and Welsh 17s. to 19s. 6d. per ton free on rails in bulk.

BICHROMATES OF POTASH AND SODA are only in very moderate request, and since last quoted the discount has been increased for home business. Bichromate of potash, English and Scotch deliveries, 3½d. per lb. less 10 per cent., and export 3½d. per lb. net f.o.b. Glasgow. Bichromate of soda, English and Scotch deliveries, 3d. per lb. less 10 per cent., and export 2¾d. per lb. net f.o.b. Glasgow.

SULPHOCYANIDES are without any improvement, either as regards demand or value. Potassium, 6¾d. to 7d. per lb.; ammonium, 95 per cent., 6½d. to 6¾d. per lb.; and barium, 95 per cent., 3½d. to 3½d. per lb.

Manchester Chemical-market.

(From our own Correspondent.)

Manchester, August 12.

While there is only a moderate business passing in drugs, there is more movement in drysalteries. Block gambier is dearer, with cubes unchanged. Turmeric is lower for Madras finger. Heavy chemicals are generally slow. Copper sulphate continues to advance, both for prompt and forward delivery. Sulphate of ammonia is 2s. 6d. to 5s. per ton higher. Benzols are unchanged, but crystal and crude carbolic acid is lower. There is little doing in farinas and sizing flour. Oilcake is in moderate request at late quotations. Lubricating and illuminating oils are rather dull. Ammonia muriate 24l. per ton, sulphate of ammonia 11l. to 11l. 1s. 3d., on rails, Manchester. Acids: arsenic, S.G., 2,000°, 26s. 6d.; glacial acetic, 35s. per cwt.; sulphuric (free from arsenic), 145°, 36s. per ton. Aniline oil 5½d., salts 5d. per lb. Chloride of barium, refined crystals, 7l. 10s. per ton. Barytes, refined white, 32s. 6d. to 35s.; grey, 35s. to 37s. 6d. per ton. Benzols, 50's, 7½d.; 90's, 7½d. per gal. Carbolic acid, 39° to 40° C. crystals, 4¾d.; 34° to 35° C., 4½d.; crude 60's, 1s. 4½d. to 1s. 4½d. East Coast, and 1s. 3¾d. to 1s. 4d. West Coast. Carbide of calcium for acetylene gas manufacture, 12l. to 14l. per ton. Copperas (green), 42s. 6d. to 45s. per ton, f.a.s., Manchester Ship Canal. Bleaching-powder, 4l. 2s. 6d. to 4l. 7s. 6d. per ton, softwood casks on rails at works. Glycerin (chemically pure, tins and cases), 65l. to 66l.; 5-cwt. drums, 61l. per ton. Foreign white sugar of lead, 23l. to 23l. 10s.; grey, 20l. 10s. to 21l.; nitrate, 24l.; acetate, 23l. per ton. Methylated spirits, 61 o.p., 1s. 8d. per gal. Naphthalene, 4l. 10s. to 8l. 10s.; salts, 30s. to 35s. per ton; Manganese, 94 per cent., 30l. to 32l.; 80 to 85 per cent., 7l.; 70 per cent., 6l. 15s.; 60 per cent., 5l. 15s. per ton. Potash, carbonate, 90 per cent., 16l. 10s. per ton; chlorate, 3½d. per lb. Glauber salts, 42s. 6d., f.o.r. Sulphate of magnesia (Epsom salts), 60s. per ton bags, and 70s. to 85s. per ton, casks and barrels (export), according to quality. Verdigris (English), 9d. per lb. Alizarine, artificial, 7d. per lb. White powdered arsenic, 15l. per ton. Sulphate of copper, 21l. 10s. to 22l. per ton, best brands, delivered Manchester. Suboxide of copper (commercial powder), black, 10¾d.; red, 11d. per lb.

American Drug-market.

New York, August 4.

Apart from a moderate movement in articles required for the summer trade, the drug-market presents a rather tame appearance. List prices are nominal as regards round parcels, and apply only to the jobbing lots in demand. Opium is lower, Canada balsam and serpentry higher.

ALOES.—Curaçao in boxes is in plentiful supply, but nothing better than 6½c. can be done in a jobbing way. Aloin is in easy tendency at 75c. to 85c., as to quantity, in sympathy with the low prices for raw material.

CAMPHOR.—Refined is in rather better position owing to the scarcity of foreign and the firmer European markets. Demand is slow, however, and the former quotations of 50c. to 51c. are in force. The Treasury Department has now approved of the free admission of synthetic crude.

CANADA BALSAM.—The supply on spot is extremely light and under good control, and, following some sales at \$5, prices advanced \$1 to \$6 to \$6.10 per gal. for barrels and cans respectively. Very little is available at primary sources, and the high prices are fully warranted.

COPAIBA.—The trend of the market for C. and S. American continues easy, and U.S.P. grades are obtainable at 45c. to 50c. in jobbing lots.

GUARANA.—Spot supplies are practically all in the hands of one dealer, and while the movement does not amount to much, a firm price of \$3.75 is maintained.

HYDRASTIS has been taken on a moderate scale at the enhanced prices of \$1.90 to \$2 for fall-dug. Up to \$1.75 is

asked for the spring root, and the tone of the market for both varieties is undoubtedly firm.

MANDRAKE is steady at former values.

OPIMUM is now available on spot at \$5.50, representing a decline of 25c. This declining trend has been indicated for some time past, and was kept in check by the local conditions of supply and control. Little business in case lots is passing, consumers operating with the utmost moderation.

PEPPERMINT OIL (American).—Little of general or particular interest has developed in this market, and the position remains as before. Some export business has been done in bottled oil at \$2.35. Tins are worth \$1.40 to \$1.60, as to quantity.

SARSAPARILLA (Mexican) is in active demand incident to the season, and higher at 8½c.

SENEGA (Western).—Plentiful supplies are obtainable at primary sources, and the spot market is distinctly easy at 40c., with lower prices in prospect.

SERPENTARY has advanced on spot to 47c. in sympathy with the stronger markets in the country.

ACID, CITRIC, is unaltered, but extremely scarce on the spot, the price of English being nominal at 1s. 4d., while foreign is obtainable at 1s. 3½d. In the drug auction three kegs of guaranteed B.P. crystals were offered and sold without reserve at 1s. 2¾d. per lb.

ANTIMONY.—English regulus has been steady for several weeks past at from 31l. to 32l. per ton; Japanese crude is offered at from 16l. to 17l. per ton, spot.

BALSAM COPAIBA.—The price of Maranham as imported is 2s. 10d. per lb. in Liverpool, and on the spot Maracaibo is obtainable at 2s. 3d. net. A parcel of so-called pure imported, *via* New York, is being offered on this market, so that buyers would do well to obtain a certificate of analysis before purchasing anything at a low price.

BELLADONNA ROOT continues very scarce on the spot, buyers having to pay up to 67s. 6d. spot for anything approaching good quality.

CAMPHOR (CRUDE).—The spot price of China crude is unaltered at 165s., and August-September shipment at 160s. c.i.f., but no business is reported.

CAMPHOR (REFINED).—Spot sales of Japanese refined in 1-oz. tablets have been made at 1s. 9d., but for shipment the higher price of 1s. 10½d. c.i.f. is quoted for 1 oz. and 1s. 10d. c.i.f. for slabs. English is slow at about 2s. 3½d. per lb. for bells in minimum lots of 5 cwt.

CANARY-SEED is a very quiet market, but quotations are unchanged at 32s. per quarter for Turkish and cleaned River Plate, and 34s. to 36s. for ordinary to good Morocco.

CANTHARIDES.—New Russian are offered at 2s. 6d. per lb. c.i.f.

CARAWAY-SEED.—The spot value of Dutch is 40s. per cwt., but new crop is offering at about 35s. 6d. f.o.b. Holland.

CASCARA SAGRADA.—Contradictory reports continue to be received from the United States as to the outlook for this article. Here the opinion is gaining ground that we shall see higher prices presently. The bulk of the stock on the spot is in fairly strong hands, the holders of which prefer to wait developments. Rather a large quantity has been turned over this week on account of a "tired" holder, who obtained from 35s. 6d. to 36s. per cwt. for two-year-old bark, and 36s. is now the lowest. In the drug-auction 79 bags three-year-old bark offered and 44 sold at 31s. for loose collected and slightly grease-damaged.

CHAMOMILES.—The new Belgian crop is again offering at lower prices—viz., 58s. to 60s. per cwt. c.i.f., but as yet no important buying has taken place.

CHILLIES.—At auction 25 bags Java sold at 25s. for fair red.

CINCHONA.—The stock in first hands at Amsterdam on August 6 consisted of 20,645 packages, comprising 16,031 packages private and 4,614 packages Government bark. The shipments of bark from Java to Europe during July amounted to 1,469,000 Amst. lb., against 1,360,000 Amst. lb. in 1907, 1,443,000 Amst. lb. in 1906, and 1,409,000 Amst. lb. in 1905. The shipments from January to July amount to 8,826,000 Amst. lb., against 9,566,000 Amst. lb. in 1907, 7,308,000 Amst. lb. in 1906, and 8,447,000 Amst. lb. in 1905. In the drug auction eight bales of fair flat cultivated Calisaya were bought in at 1s. per lb.

CLOVES.—At auction 84 bales Zanzibar were bought in at 4½d., and small sales of fair picked Penang were made at 11d. Privately the delivery market is lower, the moderate sales including August-October at 4½d. to 4¾d.; Oct.-Dec. at 4¾d. to 4¾d.; for arrival Oct.-Dec. shipment has been sold at 4¾d., and January-March at 4¾d. to 4¾d. c.i.f. d/w. closing sellers.

COCAINE.—It is stated that on the present cost of crude the price of hydrochloride should be 8s. per oz.; second-hands quote 7s. 9d., but only small quantities are on offer.

COCOA-BUTTER.—At auction 30 tons of Cadbury's A sold at from 1s. 2d. to 1s. 2¼d. per lb. (average price, 1s. 2¾d.), being ¾d. per lb. dearer.

COPPER SULPHATE is higher, Liverpool brands being quoted 20l. 5s. per ton for prompt delivery, and for January-April 21l. is quoted. London quotations are nominal.

CORIANDEER-SEED remains firm, with further business reported at 12s. 6d. to 12s. 9d. per cwt. for Morocco on the spot. Russian is quoted 13s. 6d. on the spot and 12s. 6d. c.i.f. for shipment.

CUMIN-SEED is steady, with small sales of Morocco at 40s. to 45s. for ordinary to good, and Malta at 42s. to 45s. for fair to fine.

FENUGREEK-SEED is firm at 10s. 6d. per cwt. on the spot for Morocco. The quotation to arrive is 9s. 6d. c.i.f. terms.

FERRI ET AMMON. CIT. has been reduced 1d. per lb. to 1s. 3d. in 1-cwt. lots, to 1s. 4d. for 28-lb. lots, and to 1s. 5d. for smaller quantities.

FERRI ET QUIN. CIT.—The makers have reduced their prices by ¼d. per oz. at from 3d. to 3½d. per oz. in bulk, according to quantity, and for 1-oz. vials from 4d. to 4½d. per oz. is quoted as to quantity.

GINGER.—At auction 333 barrels offered, of which a small proportion sold at 60s. per cwt. for middling dullish; 88 bags fair lined Japan realised 28s. A moderate quantity of Cochin and Calicut was bought in, comprising bold cut selected at 85s. to 87s. 6d.; small and medium at 55s.; and small washed Cochin at 36s.

GRAINS OF PARADISE are a shade easier at 70s. per cwt. on the spot.

LINSEED is firm at 48s. to 50s. per quarter for fine qualities.

MACE sold at full prices, 53 packages West Indian realising 1s. 4d. to 1s. 6d. for fair to good pale, 1s. 2d. to 1s. 3d. for fair pale and reddish, 1s. 1d. for good pickings, and 10d. to 11½d. for broken.

MENTHOL rather firmer, with small spot-sales of Kobayashi at 7s. per lb., an advance of about 1d., and for shipment the prohibitive figure of 7s. 4½d. c.i.f. is quoted. Business has been done in Suzuki at 6s. 9d. c.i.f. for August-September shipment, but importers now ask 6s. 10d. In the drug-auction one case of Suzuki sold at 6s. 9d. per lb.

OIL, ALMOND, is firm at 1s. 7d. per lb. for sweet B.P., and for so-called *peach-kernel* oil 1s. 4d. is quoted in 1-cwt. lots.

OIL, ANISEED, STAR, is steady, new arrivals of the "Red Star" brand offering at 4s. 5d. on the spot, and for shipment 4s. 2d. c.i.f. is quoted.

OIL, COD LIVER.—An advice from Bergen quotes finest non-freezing oil at 57s. per barrel c.i.f. terms. Our Bergen correspondent writes on August 10 that the market still continues very dull. The price of 52s. per barrel f.o.b. Bergen for finest non-congealing Lofoten oil is still maintained, but the demand is nil. The exports from Bergen up to date amount to 10,668 barrels, against 6,760 barrels at the corresponding date of 1907.

OIL, PEPPERMINT.—American is steady with spot sales of good brands at 6s. 3d. per lb., which is now lowest, and for H.G.H. 10s. 10½d. to 11s. is quoted. Japanese dementholised is quoted 4s. 6d. to 4s. 7d. spot, and 4s. 4d. c.i.f. An advice from New York states that the distillation of the new crop is now in progress, but has not been carried far enough to justify estimates of the probable total yield. Meanwhile there is very little demand, and dealers expect new-crop oil to come on the market at a concession on spot prices.

OIL, SPEARMINT.—An advice from New York states the weakness in spearmint increases with the progress of distillation of new crop. While spot (New York) old crop is still quoted \$4.50 and upwards, no business can be done at this figure except in the smallest quantities to satisfy urgent needs; and, although new crop is offering from the West for prompt shipment at about \$3.50, it attracts no interest.

OPIUM.—A Smyrna correspondent writes on August 8 that American buyers came forward, but not being able to obtain old crop they purchased 150 cases new, and a sale of 50 cases was also made to England; the prices paid comprised Karahissar at 125 pts. and secondary quality at 120 pts., equivalent to 13s. 9d. and 13s. 4d. per lb. c.i.f. European ports. The arrivals amount to 1,006 cases, against 913 cases. A monthly report on the Smyrna opium market dated July 31 states that during the first half of the month 53 cases were sold for the Dutch East India Government at 16s. 6d. per lb., and 75 cases manufacturing qualities at from 15s. 6d. to 16s. Since then the market has been very quiet, and this absence of demand has discouraged holders of new opium to such an extent that they are all willing to make substantial concessions in order to bring about business.

PEPPER was not offered at auction. Privately fair Singapore is quoted 3½d. spot, and for arrival the sales include September-October shipment at 2½d. e.i.f. d/w. White is quoted at 5d. spot for fair Singapore, and at 4½d. for fair Penang. For arrival the market is easier, with sales of August-October shipment at 4½d. e.i.f. d/w.

PIMENTO.—At auction 203 bags were offered, of which part sold at 2d. per lb.

POTASSIUM NITRATE.—The high price of citric acid does not warrant a reduction in potassium citrate, which remains unchanged at 1s. 6d. per lb.

QUICKSILVER.—Importers' price is unaltered at 7l. 17s. 6d. per bottle, and in second hands 7l. 14s. 6d. is quoted.

QUININE continues flat, sales being confined to consumptive requirements at 7½d. per oz. for the usual brands of German sulphate, makers continuing to quote 8d.

SANTONIN has been in more inquiry lately, but there is practically nothing obtainable on the spot below the scheduled prices of from 9s. to 10s. per lb. as to quantity.

SHELLAC.—In the absence of demand prices have declined in all positions, the spot value of fair free TN orange being 115s., being a reduction of about 5s. per cwt. Both the arrival and delivery markets are lower.

SODIUM NITRATE is easier at 10s. 4½d. per cwt. spot for refined and at 9s. 10½d. for ordinary; Liverpool is quoted 10s. 3d. and 10s. respectively.

TONKA BEANS.—Owing to extreme scarcity, both here and in the United States, the price of genuine Angostura, which are in the hands of practically one holder, has been advanced to 6s. per lb. on the spot. A sale of an old lot of 20,000 lb. which has been made to the American Tobacco Co. of New York is the cause of this advance.

WAX, VEGETABLE.—The price of Japan has advanced 3s. per cwt. on the spot, small sales having been made up to 55s., and for June-July shipment 47s. 6d. e.i.f. has been paid.

London Drug-auctions.

At the auctions of first-hand drugs the tone was dull throughout, the bulk of the offerings being bought in. Cape aloes sold with some difficulty at a decline of 1s. 6d. to 2s.; Socotrine, in kegs, brought full rates. Areca is plentiful, and tending easier. Buchu is scarce and firmer. Sumatra benzoin is barely steady. Cardamoms are quiet, but about steady; but decorticated seed was "full up." Cassia fistula, being scarce, brought full prices. Dragon's-blood and gamboge are neglected, and tending downwards. Guaiacum sold at better prices. Jamaica honey realised rather firmer prices for the lower qualities, of which the bulk consisted. Ipecacuanha declined about 2d. per lb., a new parcel of East Indian being neglected. Singapore citronella oil was lower. Rhubarb is quiet, and about steady. Native sarsaparilla brought previous prices, and for new Tinnevely senna there was keen competition at generally "full up" to ¼d. per lb. dearer rates. Beeswax showed no material change, being quiet. The following table shows the amount of goods offered and sold, the asterisk denoting private sales:

	Offered	Sold		Offered	Sold
Acid, citric	8	3	Lime-juice ..	2	0
Aloes—			Menthol	1	1
Cape	73	56	Musk (bot.) ..	3	3
Socotrine	15	15	Myrrh	10	0
Areca	136	0	Nux vomica ..	172	0
Argol	29	0	Oil—		
Balsam—			bay	1	0
Canada	1	*1	cayuput	5	0
Peru	3	0	cinnamon (leaf) ..	1	0
Benzoin—			citronella	20	20
Sumatra	76	40	clove	2	0
Buchu	10	7	eucalyptus	27	0
Cannabis indica—			orange (bitter) ..	1	0
Bombay	5	0	spearmint (tin) ..	1	0
Cardamoms	197	95	wood	50	0
Cascara sagrada ..	79	44	Olibanum	114	0
Cascarilla	13	0	Orange-peel	4	4
Cassia fistula	6	6	Papain	9	6
Cinchona	8	0	Rhubarb (China) ..	15	6
Civet (horns)	5	0	Sandalwood chips ..	23	0
Coca-leaves	26	0	Sarsaparilla—		
Dragon's-blood ..	12	0	Native	19	16
reed	12	0	Scammony root		
Ergot	8	0	(Mex.)	411	0
Gambier	182	0	Seedlac	21	*21
Gamboge	21	1	Senna—		
Gentian	50	0	Alex.	58	16
Guaiacum	6	6	Tinn.	371	364
Gum arabic	20	3	Squill	11	0
Honey—			Sticklac	90	0
Jamaica	154	121	Tamarinds (W.I.) ..	120	30
Ipecacuanha—			Tragacanth	4	4
East Indian	23	0	Wax (bees')—		
Matto Grosso ..	13	9	East African ..	30	0
Jalap	8	0	East Indian ..	10	0
Kamala	2	0	Jamaica	22	10
Kola	27	1	Madagascar ..	325	37
			Zanzibar	139	13

ALOEES.—Cape (Mossel Bay) sold at a decline of 1s. 6d. to 2s. per cwt., good bright hard firsts on the usual 20 per cent. tares realising from 29s. 6d. to 30s. per cwt.; slightly soft ditto, and good seconds 29s.; fair hard slightly drossy seconds 27s. 6d. to 28s.; ordinary dull and partly drossy, 26s. to 27s.; common dull coarse and very cindery, 24s. to 25s. 6d.; and inferior mixed with sand, 17s. 6d. per cwt. Ten cases of good stiff pasty Socotrine sold at the full price of 90s. per cwt.

ARECA is plentiful, with sellers in quantity at 18s. per cwt.

BENZOIN.—Sumatra, the only description offered, sold at about steady prices. Twenty cases of common brown thirds realised without reserve from 90s. to 95s., and a further ten cases of woody false packed thirds sold at from 82s. 6d. to 87s. 6d. per cwt. From another catalogue ten cases of fair thirds with a few bold scattered almonds sold at the valuations, 5l. to 5l. 2s. 6d., and two cases common seconds packed at 5l. 15s. per cwt.

BUCHU.—The stock is now in small compass and firmer prices were paid in auction, 7 bales being disposed of at from 8½d. to 8¾d. for fair small round greenish.

CANNABIS INDICA.—For three cases of good green Bombay tops 4s. 7d. was wanted, and for a further two cases of fair the price was 4s. 6d. per lb.

CARDAMOMS proved slow of sale, but prices were about steady. Seed was in good demand. A case of extra bold fine pale Ceylon-Mysore was bought in at 3s. 6d., a bid of 3s. being refused. The following prices were paid:—Ceylon-Mysore, extra bold pale, few split, 2s. 2d.; bold and medium palish to pale, 1s. 8d. to 1s. 10d.; small and medium palish to pale, 1s. 5d. to 1s. 7d.; very small peas, 1s. 4d.; brown and split, 1s. 3d. to 1s. 5d. Splits, dull bold, slightly mouldy, 1s. 6d., and medium splits, 1s. 4d.; pale to dark seed, 1s. 6d. to 1s. 9d. per lb.

The exports from Ceylon from January 1 to July 20, 1908, amounted to 344,387 lb., or 98,309 lb. less than at the corresponding period of 1907.

CASSIA FISTULA.—Six bags realised 18s. per cwt. for fair Dominican pod.

COCA LEAVES.—For 26 cases of ordinary thin brownish to common Ceylon-Truxillo 3½d. per lb. was wanted, but no higher bid than 2¾d. was obtainable for the best lots.

DRAGON'S-BLOOD is tending easier. Twelve cases of good re-boiled Singapore lump were offered and bought in at 12*l.*, a bid of 11*l.* being refused. Ten cases of good reed were bought in at 9*l.* per cwt. A further 10 cases have arrived from Singapore per *Hakata Maru*.

ERGOT.—New Spanish is quoted 1*s.* 3*d.* to 1*s.* 4*d.* per lb. c.i.f.

GAMBOGE.—Tending easier. Fourteen cases of old-fashioned native-picked Siam pipe with good bright orange fracture, with a few dark-centred pieces, were offered, of which one sold at 15*l.* 15*s.*, nobody being inclined to go on at the figure; the remainder was bought in at 16*l.* 10*s.*

GENTIAN.—A parcel of 50 bags, slightly woody, yellow and red mixed, was held for 21*s.* per cwt. Privately 21*s.* to 22*s.* c.i.f. is quoted.

GUAIACUM.—Six casks of fair glassy block realised 6*d.* to 6½*d.* and slightly drossy 4½*d.* per lb., being rather firmer.

GUM ARABIC.—Seven casks of fair palish brown Barbary gum were limited at 35*s.*, and a cask of small ditto realised 30*s.* per cwt. subject. Two cases of fair pale picked Trieste grains sold at 80*s.* per cwt., and for 10 bales pale yellow and amber Ghezireh sorts 35*s.* was wanted.

HONEY.—Jamaica was in fair demand, the lower qualities of which the bulk consisted realising firmer rates; fair pale set in barrels was bought in at 30*s.*, a bid of 27*s.* 6*d.* being refused; yellow setting sold at 25*s.* 6*d.*, brown set 21*s.*; pale amber liquid 23*s.* to 24*s.*, and dark to dark amber 19*s.* 6*d.* to 22*s.* per cwt.

IPECACUANHA is about 2*d.* to 3*d.* per lb. lower; 13 bales of Matto Grosso were offered, of which nine sold at from 5*s.* 1*d.* to 5*s.* 2*d.* for dull to fair grey, and at 5*s.* for ordinary dull and partly country damaged. A new parcel of 23 bales of East Indian was offered and bought in at 5*s.* 9*d.* The highest bid obtainable was 5*s.* 3*d.* per lb., but the actual selling-price did not transpire.

JALAP.—Eight bags of Vera Cruz containing 7 per cent. of resin were bought in at 1*s.*, no response being made to a suggestion of 10*d.* per lb.

KAMALA.—Good sifted Bombay was limited at 1*s.* per lb.

KOLA.—A case of good small to bold dried Ceylon sold at 2½*d.* per lb., and for 24 bags of slightly mouldy dried Ceylon 1½*d.* was wanted.

MYRRH.—A lot of 10 bales fair partly blocky Bombay sorts was held for 62*s.* 6*d.* per cwt.

NUX VOMICA.—Quiet. A bid of 8*s.* 6*d.* per cwt. is to be submitted for 60 bags of medium dark unwashed Madras.

OIL, CINNAMON.—A drum of genuine leaf oil from Colombo containing 87 per cent. of eugenol was held for 2*d.* per oz.

OIL, CITRONELLA.—Twenty cases of good green Singapore offered and sold without reserve at 11½*d.* per lb., being cheap.

OIL, GURJUN.—A lot of 50 drums from Singapore was bought in at 6*d.* per lb.

ORANGE-PEEL.—Four cases of pale strip sold without reserve at from 4½*d.* to 4¾*d.* per lb.

RHUBARB.—Quiet. The only business done referred to a lot of six cases, offered without reserve, which sold at 1*s.* to 1*s.* 1*d.* per lb. for high-dried of Canton character, with three-quarter pale pinky fracture and one-quarter grey and dark; and for small, round and trimming root, of the same fracture, 1*s.* was paid. Extra bold heavy orange-coated Shensi, with three-quarter good pinky fracture was limited at 2*s.* 8*d.* per lb., and for medium round Canton, 1*s.* 4*d.* was wanted. Four cases of medium to bold round horny pale-coated High-dried, with half good pinky fracture and half grey and dark, were retired at 9*d.* per lb., the actual selling price being 7½*d.*

SARSAPARILLA.—The only description offered was native-Jamaica, which was all sold at firm prices, including fair to good red at from 1*s.* to 1*s.* 1*d.*, ordinary yellow and pale red mixed from 11*d.* to 1*s.*, and common yellow mixed 10*d.* to 10½*d.* per lb. Privately Mexican is dearer at 4½*d.* per lb. c.i.f. in 50-bale lots, and for small lots on the spot 5½*d.* is quoted. Grey Jamaica ex the auction of a fortnight ago is offered at 1*s.* 10*d.*, but Lima-Jamaica is scarce.

SCAMMONY ROOT.—A new parcel of Mexican, without test, was bought in at 40*s.* per cwt. nominally.

SENNA.—The new crop of Tinnevely, the first arrivals of which were offered in quantity to-day, met with keen competition, and although prices were occasionally irregular, the bulk which was offered towards the close of the sale realised "full up" to ¼*d.* per lb. dearer rates. Seven bales of fine bold green were held for 5*d.*, and a bid of 4½*d.* is to be submitted. The following prices were paid: Medium and bold greenish, 4*d.* to 4½*d.*; small and medium greenish, 3*d.* to 3½*d.*; small greenish, 2½*d.* to 2¾*d.*; ordinary small specky, 1½*d.* to 2*d.* Pods sold at from 2*d.* to 2¾*d.* for dark to pale. Fifty-eight packages of Alexandrian were offered, but the asking price of fair green leaf did not transpire, no response being made to a suggestion of 7*d.* Twelve bales of slightly stalky siftings sold at 1½*d.*; two bales of sea-damaged pods and two bales of siftings sold on underwriter's account.

TAMARINDS.—Thirty barrels of fair bright Barbados offered in bond sold without reserve at from 11*s.* 3*d.* to 11*s.* 6*d.* per cwt.

WAX (BEES).—A large quantity of Madagascar was offered, of which small sales were made at from 6*l.* 5*s.*, subject to 6*l.* 7*s.* 6*d.* for dark brown block, slightly drossy; good brown is held for 6*l.* 15*s.* Thirteen mats of fair, softish, yellow Zanzibar block sold at 6*l.* 15*s.*, and a bid of 6*l.* 12*s.* 6*d.* is to be submitted for ten mats of fair brown, part greyish to darkish block. Jamaica was steady, ten packages selling at from 7*l.* 7*s.* 6*d.* to 7*l.* 10*s.* for ordinary dark to rather dark brown mixed; four barrels very grey were bought in at 7*l.* 5*s.* per cwt.

A Cardamom Contract.

At the Colombo Court on July 9, an action was brought by L. S. Gooneratne against J. J. Vanderspar & Co. for Rs. 356.50 damages. Plaintiff alleged he sold 3,440 lb. of cardamoms as per sample for Rs. 2,619, but that defendants failed to take delivery. Plaintiff sold the cardamoms by auction at defendants' risk, and suffered damages Rs. 356.50. The dispute between the parties was as to the place of passing the cardamoms. Plaintiff wanted the cardamoms to be passed at his stores, and defendants insisted on them being brought to his stores for passing. The Judge, in dismissing the action, with costs, said plaintiff made no tender within a reasonable time after the contract was made; neither had he any right to impose conditions which did not exist in the written contract—in fact, the plaintiff made no delivery at all.

Cape Aloes and Buchu.

Having represented to the South African Customs Statistical Bureau that the figures relating to the exports of aloes and buchu from Cape Colony as published in their quarterly and annual returns do not convey a correct idea of the destination of the products, the Acting-Principal informs us that the matter has been the subject of important representations at the Bureau, as it has been found that the practice at present obtaining of declaring, on the export bill of entry, the destination of the carrying vessel rather than the ultimate destination of the goods themselves is productive of very misleading figures. But hitherto any alteration in method has met with the very strongest disapproval from the mercantile community. In the circumstances, therefore, it is impossible (says the Bureau) for any more accurate information to be published, as the Bureau is necessarily dependent upon the Customs Union forms for its published returns and the ship's manifests are not placed at its disposal.

Java Cinchona.

Mr. F. L. Upjohn, of the Upjohn Co., New York, who has recently returned from a tour round the world, states in the "Pharmaceutical Era" that the idea prevalent in some quarters that the cinchona trees in Java are being rooted up to make room for tea plants is entirely erroneous. While tea culture in Java is undoubtedly on the increase, it does not conflict with the production of cinchona, but rather with that of coffee, which is a dying industry in Java. Coffee is really a thing of the past in the island, as the growing of tea has proven to be cheaper and more profitable. Cinchona is allowed to grow from five to seven years before the bark is gathered. Trees are at their best at about seven years. Then they are rooted up, and the bark stripped from the roots as well as from the trunk and main branches of the tree.



TO CORRESPONDENTS.—Please write clearly and concisely on one side of the paper only. All communications should be accompanied by the names and addresses of the writers. Publication of letters does not imply our agreement with the arguments or approval of the statements therein. If queries are submitted, each should be written on a separate piece of paper. We do not reply to queries by post, and can only answer on subjects presumably of interest to our readers generally. Letters received after the early posts on Wednesday cannot as a rule be dealt with in the current week's issue.

BUSINESS INFORMATION.—We have very full records of the makers or agents for articles and products connected with the chemical and drug trades, and supply information respecting them by post to inquirers. Inquiries regarding any articles which cannot be traced in this manner are inserted under "Information Wanted."

The Title Question.

SIR,—The letter in your issue of July 25 (p. 111) received by Mr. J. H. Smith from the Earl of Creve makes it very clear that, at any rate, the permanent officials of the Privy Council fail to grasp the important matter of personal title. That the title is valuable as an asset was given in evidence before the Committee of the House of Commons. Suppose anyone had appropriated the President's coat and pleaded for its retention as he found it useful, the defence would be novel but, I think, ineffective. I have, and I know the *C. & D.* have, many times contended that the defence of the personal title is one that should be undertaken at all hazards. The powers that have been—shall I say?—have readily undertaken the "busting up" of any individual who assumed it, but have never boldly tackled companies, as they should have done.

M.P.S. (13/50.)

Otto of Rose.

SIR,—With reference to Mr. Parry's article on otto of rose in your issue of August 3, I should like to say that my principal, Mr. Dimitro Pappazoglou, one of the oldest and largest exporters of otto of rose, agrees with the figures given in Messrs. Schimmel & Co.'s report. He wishes to do this the more emphatically as in this season as well as last season some firms, who take the physical constants of the oil before testing the perfume and strength (which latter has a little to do with the stearoptene percentage), simply ignored the oil when buying on the score of constants alone. How unfair this is to the seller and disadvantageous to the buyer may be gathered from examining the figures of the two following samples, with the extracts from remarks made thereon. The samples examined represent the best quality of oil Mr. D. Pappazoglou was selling, A in 1907 and B this season, and were tested by Mr. J. C. Umney:

A.			
Specific gravity (36°/15° C.)	...	...	859
Optical rotation	...	...	-3°
Refractive index at 25°	...	...	1.4635
Melting-point	...	...	21°-22° C.
Stearoptene-content	...	...	12.3 %

"The sample is particularly sweet in smell, comparing favourably with other brands. I do not think that it contains added geraniol, having compared it with samples containing 5, 10, 15, 25, and 30 per cent. of geraniol."

B.			
Specific gravity (30°/15° C.)	...	...	0.861
Optical rotation	...	...	-3° 40'
Refractive index at 25°	...	...	1.4650
Melting-point	...	...	15° C.
Stearoptene-content	...	...	12.7 %

"The specific gravity is above B.P. limits; the other characters are normal, and consistent with the low stearoptene-content. In my opinion the odour-value is excellent."

To speak only of this year's sample, B, I may add that several important consumers of otto have confirmed the above opinion of quality. I think that a good part of the solution of this difficulty is to be found in the few

words relative to the "low stearoptene percentage," for it is a well-known fact that the chief consumers complain of the large percentage of stearoptene found in otto. Only this year a very large user told the writer that he often found it to be over 20 per cent. A high percentage brings down the gravity and increases the melting-point, and is produced to a great extent by distilling the flowers too long. After having satisfied himself as to odour, Mr. D. Pappazoglou turns to the melting-point and stearoptene percentage, and lets the other constants look after themselves. I think that a chemical analysis without an estimation of stearoptene percentage is relatively as incomplete as a chemical analysis without examination by the nose. Taking for granted that the five samples first referred to in Mr. Parry's article are pure, it is still necessary to show that they are the best value obtainable by showing that they contain as little odourless stearoptene as samples A and B mentioned above. The price also helps to prove the purity of the above, the prices for large quantities in both cases being 27s. 6d. per Turkish oz. (equal to about 24s. 3d. per English oz.). In reply to an obvious suggestion about profits by sellers and buyers of qualities at from 22s. to 24s. per Turkish oz. during, say, only the last few months, I would refer your readers to a letter in the *C. & D.* (September 7, 1907), wherein it is stated that pure otto was then costing on an average 26s. 8d. per T. oz. (1,048f. per kilo.), excluding only exporter's profit; and to your Trade Report, July 25, 1908, that lowest first cost—that is, excluding all profits and expenses—this year was about 21s. 6d. per E. oz. (=24s. 6d. T. oz.). These facts, as far as I have been able to find, have not been challenged by any other Bulgarian firm; they are, however, confirmed by sellers at first-named prices, and their exposure should assist wholesale dealers who agree with Mr. Pappazoglou and other sellers of good otto of rose in point of quality to sell the oils they consider to be of the best value obtainable, both as regards odour and stearoptene-content, in spite of the specific gravity and refractive index Nature chooses to endow them with.

Yours faithfully,

63 Bartholomew Close, E.C.

W. NAUMANN.

Chemists' Assistants in India.

SIR,—I intended drawing attention to the conditions of chemists' assistants in India from a financial point when I returned from that country a few years ago. I did not do so at the time, thinking the subject was perhaps of little interest to your readers. "Exile" (*C. & D.*, May 16, p. 767) suggests a minimum salary to commence of Rs. 250 per month, and it is just possible ninety-nine out of one hundred chemists' assistants, with a good all-round experience and qualification, who have been to India will bear me out that this salary is fair and reasonable. It is readily given by firms of repute, who first of all go to the trouble of ascertaining whether an assistant will be of some use to them before any agreement is signed. Mr. Bliss (*C. & D.*, June 27, p. 982) puts his estimate of "Rotters" who go out so high as three out of four. If this is correct, there must be something radically wrong. Agents must be careless, or employers are difficult to please, but this is no argument why the assistant should not be paid a proper and adequate salary. I do hope the assistant who enters upon a "second agreement" of this kind does so after very serious consideration, and that he has made up his mind definitely to permanently make India his home, otherwise the sobriquet often applied to India as the "Land of Regrets" will become a reality that only those who are acquainted with the East can realise. An assistant has not much to unlearn, but has plenty to learn, and it is well to be prepared to do everything that comes along. India is not the place for delicate susceptibilities under any circumstances. The assistant will find on arrival that for four years he will be isolated from all society and amusement such as he obtains in England; he must be content to derive all interest of life from his business and surroundings; he will have unrivalled opportunities for studying human nature, which is not wholly confined to the native races, and if he is a student in this direction he will obtain a lot of amusement. If he is not prepared for this mode of living it is far better to remain in England. I certainly should not advise any assistant to go East under

Rs. 250, rising by annual increases of Rs. 25 to 50, according to his position. "Domiciled" (*C. & D.*, August 8, p. 248) was content with Rs. 150, but he sets small account of his value evidently. His salary is very little more than many native compounders are paid, and it is a pity such statements are made that an Englishman can live little better than a native on such a salary. It is folly on the part of the employer to take a man from England on a salary that he knows quite well will only make the assistant discontented and a feeling that he has been "sold." Moreover, it is impossible to get the best work out of a man under these conditions, apart from "delicate susceptibilities."

Yours truly,
ANGLO-INDIAN. 19/11.)

The Walden Fund.

SIR,—When the failure of the Westminster College, Ltd., was announced, and I—as a debenture-holder—was called to attend a meeting, it came to my knowledge that Mr. Walden, who had been its Secretary for over thirty years, had sustained a severe financial loss, and was suddenly deprived of the means of gaining a living. Knowing the esteem in which Mr. Walden has always been held by the students, I asked to be allowed to make an appeal to them in order to overcome the difficulty. This has now been done as far as possible, and if the result is not all that could be desired, no appeal could have been received more kindly. The splendid tributes and the gladness with which their offerings were contributed have made my work a real pleasure, and have given me a high opinion of my brother chemists. But, unfortunately, I have not received sufficient to make the work a complete success. May I therefore appeal through your columns to those to whom I have not been able to write to help me to make this effort a success, and send me at once their mite?

Yours faithfully,

J. WELLESLEY DOUGLAS.

19 Kennington Terrace, Kennington Park, S.E.

[Mr. Douglas encloses a list of 120 subscribers to the fund.]

Water Samples.

SIR,—Since many chemists take samples of water for analysis and send them to their wholesaler or analyst for examination, and since a bottle which has had acid or ammonia is recommended as most suitable for the sample—after careful cleansing—it is desirable to warn them not to use the kind which has recently been introduced into commerce for containing ammonia. The new bottles are stoppered with screw fasteners having a buffer of black rubber. These, which are of doubtful value, cannot be recommended for pharmacists' use. For obvious reasons they should not be used for holding samples of drinking-water. The ammonia lurks about the rubber ring a very long time, as the writer has on several occasions experienced. The analytical expert will not, however, be greatly disturbed by finding a large quantity of free ammonia if all the other conditions appear right, but it is well to avoid these containers for such a purpose if possible.

Yours faithfully,

ABEL SCHOLAR. (91/19.)

What is "Otherwise"?

SIR,—The following is a cutting from a South Wales paper:

Wanted, soon as possible, experienced, qualified Dispenser (lady or otherwise) for a fortnight; 2l. 2s. weekly and railway fare.—Apply Locum, etc.

It will give one an idea of the position occupied by a male dispenser in the mind of a Welsh doctor. A female qualified dispenser is a "lady," but a male one is evidently not a gentleman; and yet this kind of medical man would probably call one of his collier patients a gentleman, and his wife a lady, and his dog a nice little dog, etc.

RAJAH. (12/68.)

Legal Queries.

G. H. (6/52).—In the case of a six-day off wine-licence the fact that the premises are to be closed on Sundays is stated on the licence certificate.

Smartness (18/23).—PAYING MONEY TO BANKRUPT.—Our correspondent writes: I owed a man a sum of money. His

lawyer asked me if I was prepared to pay it, and on my replying in the negative, he suggested that I should pay 20% of it on a certain date, and that the balance of the account should be transferred to the man's wife. I paid the amount on account on the date named, and I was surprised to receive a receipt dated November 1906, not 1907. The man was either bankrupt at this time or within a few days of it. The wife has already asked me for some money on account, and I have refused her until I ascertain my true position in the matter. ["Smartness" should certainly not pay anything to the wife, or he will probably have to pay it over again to the trustee in bankruptcy. It would be best to wait until he hears from the trustee before parting with any more money.]

Carah (15/44).—CONDITION OF LEASE.—"Carah" puts the following case to us: Nearly two years ago I bought a chemist's business, the vendor being the landlord and granted a twenty-one years' lease of shop and basement, the house over being let to a dentist. To protect the dentist a clause was inserted in the lease that "the lessee shall not use said premises for any business other than that of chemist and druggist without the lessor's consent in writing." The dentist left a year ago, and I want to start practising myself, but cannot get the landlord's consent unless I agree to take on the upper premises, which I do not require. The landlord gave a verbal promise to give his consent should the dentist leave. Am I within my legal right if I commenced practice without his consent as a maker and adaptor of artificial teeth, or could I do extractions alone? [We are afraid "Carah" has debarred himself from doing that which he now wishes to do by his covenant in the lease not to use the premises for any business other than that of a chemist and druggist without the landlord's consent in writing, which consent is now refused. If there had been a clause inserted in the lease giving permission to carry on the business of a chemist and druggist, together with any other businesses usually carried on in conjunction therewith, the case would have been different. "Carah" would have great difficulty in proving the landlord's verbal promise to give his consent should the dentist leave, and we should not care to advise him to take the bold course of starting in business as a maker and adaptor of artificial teeth or as an extractor.]

Dispensing Notes.

A Gargle Query.

SIR,—How should the following prescription be compounded?—

Glyc. acid. carbolic.	...	...	...	...	...
Glyc. acid. tannic.	...	...	...	...	...
Aluminis	...	...	...	...	gr. xx.
Aq. chlorof. ad	...	...	...	...	℥viij.

Yours sincerely,

MEDICO. (11/4.)

[Mix the glycerin of carbolic acid and the glycerin of tannic acid. Take the alum in clear crystals, powder it, and dissolve it in the mixed glycerins, then add the chloroform water.]

Zinc Cream.

SIR,—I shall be much obliged if you will let me know a correct and satisfactory way of dispensing the following in the examination-room:

Zinci ox.	...	...	...	...	...
Ol. olivæ	...	...	...	...	℥viij.
Aq. calcis	...	...	...	...	℥j.

M. Ft. applicat.

Yours faithfully,

AQUEOUS. (2/11.)

[Rub the zinc oxide with the lime-water and add the olive oil gradually with steady trituration. As soon as a uniform cream is obtained, stop the trituration, which, if continued, may lead to separation of the water.]

CHINESE STAR ANISEED.—The exports of star aniseed from Wuchow during 1907 amounted to 12,408 cwt., valued at 37,259l., against 8,374 cwt., valued at 25,586l., in 1906.

EASY COME, EASY GO.—"Do you believe there is truth in some proverbs, Mr. —?" inquired a chemist of a customer whose little bill had often been rendered. "Certainly, sir," replied the bad payer. "Then I often think that you must have great difficulty in earning money." In a few minutes the debt was cancelled.

A SACRIFICE TO SCIENCE.

A jolly young chemistry tough,
While mixing a compound of stuff,
Dropped a match in a vial,
And after a while
They found his front teeth and one cuff.

HAVE YOU CONSIDERED THE POSSIBILITIES OF YOUR OPTICAL BRANCH ?

The demand for competent, qualified sight-testing opticians is almost unlimited, and the matter is well worth your consideration.
If you are interested in the subject, write to the

BRITISH OPTICAL INSTITUTE, MOUNT EDGCUMBE GARDENS, CLAPHAM ROAD, S.W.

We can help you to develop your business.
Candidates prepared for all optical examinations.
Our system of instruction, correspondence and personal, is eminently practical and thorough.

On our staff is a fully qualified Ophthalmic Surgeon who has for some years past devoted the whole of his time to the training of oculists and opticians. He was for some years chief demonstrator and instructor in ophthalmology and in all the various branches of visual optics at one of the principal universities in Europe, and has, in addition, had extensive practice in ophthalmic hospital work.

Evening classes are held throughout the year.
Daily Classes are held for 4 or 5 weeks just prior to each examination.
Instruction in special subjects and private tuition can be arranged for at any time.

For full prospectus write to the principal,

Mr. F. GORDON HUNTLEY, F.B.O.A., F.S.M.C.

(Late Assistant Examiner to the British Optical Association).

Telephone : 677 BRIXTON.

Trade-marks Applied For.

Objections to the registration of any of the undermentioned applications should be lodged with Sir C. N. Dalton, K.C.M.G., C.B., Comptroller-General of Patents, Designs, and Trade-marks, at the Patents Office, 25 Southampton Buildings, Chancery Lane, London, W.C., within one month of the dates mentioned. The objection must be stated on Trade-marks Form No. 7, cost £1, obtainable through any money-order office.

(From the "Trade-marks Journal," July 29, 1908.)

- "LINSOL"; for chemicals in Class 1. By Williams Bros. & Co., Hanworth Road, Hounslow. 303,264.
- "STERISALT"; for chemicals in Classes 1, 2, and 3. By T. Kerfoot, Oldham Road, Bardsley, near Ashton-under-Lyne. 303,581, 303,582, 303,583.
- "SANTARR"; for disinfectants. By James Meikle, 14 Garrioch Drive, North Kelvinside, Glasgow. 303,408.
- "SAPONYGIENE"; for disinfectants. By the Society of Apothecaries, Water Lane, Blackfriars, London, E.C. 303,267.
- "Mo-EFFIC"; for a plant-mildew destroying preparation. By E. Wright & Co., Ltd., 55 Brook Street, Bradford. 303,472.
- "KILAX"; for disinfectants. By Metalloids Products, Ltd., Tibbington Works, Princes End, Tipton. 303,865.
- "HENCO," "HENKELINE," "HENKOL," "OXIDIN," and "OXIDOL"; for chemicals in Class 2. By Henkel & Co., Ltd., 218-219 Moorgate Station Chambers, London, E.C. 303,902-303,904, 303,909-303,911.
- "24-HOUR CORN CURE" (and picture of foot); for a corn-cure. By Noel Stiles, 5 Staple Inn, Holborn, London, W.C. 301,327.
- "RHEUMATINE"; for medicines. By Zimmer & Co., 46 Darmstaedter, Landstrasse, Frankfurt-on-Maine. 302,002.

WHERE TO STUDY.

THE following educational institutions are advertising in this issue:

School of Pharmacy, 17 Bloomsbury Square, W.C.
South London School (Muter's), 325 Kennington Road, London, S.E.

Westminster College of Pharmacy, 402 Clapham Road, S.W.
London College of Chemistry, 323 Clapham Road, London, S.W.

North of England School, 55 Northumberland Street, Newcastle-on-Tyne.

Leeds College of Pharmacy, Clarendon Road, Leeds.

Liverpool School of Pharmacy, 18 Colquitt Street, Liverpool.

Royal Dispensary, 21 West Richmond Street, Edinburgh.

Edinburgh Central School of Pharmacy, 26 Clyde Street, Edinburgh.

Manchester College of Pharmacy, 225a Oxford Road, Manchester.

Northern College of Pharmacy, 100 Burlington Street, Manchester.

Glasgow School of Pharmacy, 180 West Regent Street, Glasgow.

Birmingham and Midland College of Chemistry, Pharmacy, and Botany, 45 Newhall Street, Birmingham.

Nottingham School of Pharmacy, 13 Victoria Street, Nottingham.

South of England College of Pharmacy, 186 Clapham Road, S.E.

University of Manchester, Manchester.

University of Edinburgh, Edinburgh.

University of Birmingham, Birmingham.

University of Liverpool School of Pharmacy, Liverpool.

Durham University College of Medicine, Durham.

St. Andrews University, St. Andrews, N.B.

University College, Bristol.

Institute of Chemistry, 30 Bloomsbury Square, W.C.

Highbury Park College, Highbury, London, N.

Bath and West of England College of Chemistry and Pharmacy, 6 Cleveland Place, East, Bath.

Royal Dental Hospital and School, Leicester Square, W.C.

National Dental Hospital and College, Great Portland Street, W.

South-Western Polytechnic, Manresa Road, Chelsea, S.W.

Charing Cross Hospital Medical College, Charing Cross, W.C.

Burlington Correspondence College, Clapham Common, S.W.

City of London College, White Street, Morefields, E.C.

Goldsmiths' Institute, New Cross, S.E.

City of Leeds Education Committee, Leeds.

Royal (Dick) Veterinary College, Edinburgh.

Exchange Column—Bargains.

TERMS.

One halfpenny per word with name and address. One penny per word if we register the address and attach a number.

No Advertisement inserted for less than 6d.

TO BUYERS AND SELLERS.

We take every care to ensure that proprietary and other goods advertised in this column are genuine surplus stock of reputable persons in business, and are compelled to refuse advertisements sent by those who, when occasion requires, decline to satisfy reasonable inquiries as to their *bona-fides*.

We again call the attention of those who use this column for the sale or purchase of goods to the desirability of using our Deposit System. Some forward goods before they receive money for them, and others forward money to advertisers before they have even seen the goods. Disappointment in such circumstances is bound to happen now and then, and it is to prevent this, as well as to check fraud, that our Deposit System was instituted.

The buyer sends us the money for the goods, and when we hear from him that they are satisfactory, and not till then, we hand over the money to the seller. A commission of 6d. is charged by us on any transaction of 3l. or less, and 1s. if above that amount. The commission is payable by the buyer, and should be included in the money sent to us. All Cheques and Postal Orders should be made payable to "Edward Halse," and crossed "Martin's Bank, Ltd."

FOR DISPOSAL.

BOOKS AND PERIODICALS.

COMPLETE set typewritten lectures and questions for F.S.M.C. exam.; £1 5s. or nearest offer. D. H. JENKINS, Maesllan, Brecon.
B. P. '98; Ince's "Latin"; Perkin & Kippin's "Organic"; Pharmacopodia; Bower's "Practical Botany"; latest editions; cheap. 133/22, Office of this Paper.

DRUGS AND CHEMICALS.

2 CASKS oxalic acid, s/copper; clean. 136/18, Office of this Paper.

FORMULÆ.

FORMULAS for sale, good winter lines. FRANCE, 42 Vartry Road, London, N.

OPTICAL AND PHOTOGRAPHIC.

SURPLUS STOCK.—Offers invited in cash; Drugs, Chemicals, Patents, or Sundries; Beck's Frena camera, takes 40 quarter-plate cut films, fitted with autograph lens, two view finders, and set of magnifiers, in practically new condition, list price £8 17s. 6d.; Dallmeyer stigmatic lens, No. 3, Series II., 4in Unicum shutter, with 3-in. focus telephoto attachment, list price £7 10s.; Taylor, Taylor & Hobson, 6½ by 4½, W. A. R. lens, eq. focus, 4.12 Iris diaphragm, list price £2 10s.; Beck's microscope, with rack and pinion adjustment and ¼-in. high-power objective, list price £3 3s.; Taylor, Taylor & Hobson's view finders (3), 5s. each; rapid rectilinear lenses, ½ plate f/8, with aluminium ring Iris diaphragm (2), 55s. each; Beck's memo Frena, for cut films or plates, list price £1 1s. JESSE WILLIAMS, Chemist, 132 Queen Street, Cardiff.

PROPRIETARY ARTICLES.

12 DOZ. Ozonia, perfectly clean; what offers, carriage forward? STILING, Chemist, Newton Abbot.

SHARES.

SHARES for Sale. See p. 80.

SHOP FITTINGS.

WINDOW enclosure, 3 plate-glass shelves, 2 carboys, 3 counter-cases, 3 glass doors; offers wanted. 9 Pinfold Street, Darlaston, Staffs.
CARBOYS.—8-gall. show carboy, pear shape, 31 in. to top of stopper, 17-in. diam., cut stopper, what offers? J. F. ANDREWS & Co., Carlisle Road, Eastbourne.
DESK and perfume case, as Maw's 2725; 1 12-gall. pear-shaped carboy, cut stopper, 1 3-gall. ditto; round marble-top display table; scales, hand truck, shop utensils, etc.; what offers? "P.," 1a Archer Street, W.
SHOP-ROUNDS, 4½d. each; fittings for shop 13 by 12 ft., offer; 2 counter-cases, 30s.; dispensing-scales, 12s. 6d.; counter scales with weights, 14s.; 5 carboys, 2s. 6d. each; dental chair by Havard, £6. "CHEMIST," 194 Crystal Palace Road, East Dulwich.

MISCELLANEOUS.

DENTAL engine, almost new, cable top, No. 7 handpiece; cost £4 10s.; what offers? 138/1, Office of this Paper.
1906 SALTER typewriter and duplicator; cost £18; only little used; what offer? 135/41, Office of this Paper.
OVER 150 birds' eggs, mostly pairs, in beautifully polished cabinet, price 65s.; a bargain. DR. OSMOND, "Torryburn," Bishopston, Bristol.
¼-PLATE Frena, with R. R. lens, good condition; also Martindale, 10th edition; accept best offers. WALLIS, Chemist, Southbourne, Bournemouth.
WATER bed, 2 squamers batteries, Odol, No. 4 and 5 cartridge Kodak, No. 3 folding pocket Kodak; cheap or exchange. GWYNNE, Chemist, Liscard.
WHAT offers? ½ doz. sparklet syphons, ¼ sparklogenes, ½ accessories, ½ wearing parts, 1 conical percolator (Y. G. Co.), ½ gall. HOLLINGWORTH, LTD., Kirkstall.

WANTED.

BRITISH PHARMACOPŒIA cheap for cash. 133/7, Office of this Paper.
LATEST edition Druff's "Refraction." HOOPER, 32 Raikes Parade, Blackpool.
SMALL till; O'Brien's or Gledhill's pattern; cheap. LEWIS, Chemist, Port Talbot.
CHEMIST'S hand trolley, bicycle wheels; cheap. DODRIDGE, Woolston, Hants.
FORCEPS, for stumps, second-hand, cheap. SMITH'S Drug-stores, Narborough, Leicester.
DENTAL chair, cheap; also Martindale Pharmacopœia. DAVIES, 7 Station Street, Porth.
GALLON percolator, with graduated receiver; must be cheap. Offers to DREWING, Chemist, Grimsby.
GOOD electro-magnetic machine; new or second-hand. Lowest price to 133/35, Office of this Paper.
¼-PLATE Dallmeyer Stigmatic f/6 lens in good shutter; approval necessary. THOMPSON & CAPPER, Birkenhead.
MINOR, Major, Chemists' books.—Send prepaid for valuation; cash offers per return. GOWER, Bookseller, Waterloo, Liverpool.
"CHEMIST AND DRUGGIST," October 26, 1901; 1902, No. 1161; 1903, No. 1201. State price, SROCKS, 12 Victoria Road, West Kirby.
SMALL vulcanizer, with thermometer; in good condition; to hold one or two flasks; and flasks. Lowest price to 132/38, Office of this Paper.
BACK numbers of C. & D. for August 17, August 24, October 19, and December 28, 1901, and June 13, June 27, and July 18, 1903. 132/24, Office of this Paper.

